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FINANCIAL TIMES

EUROPE'S BUSINESS NEWSPAPER

No. 29,299

Monday April 16 1984

D 8523 B

NEWS SUMMARY

GENERAL

Violence obstructs Lebanon progress

A weekend of violence in which hundreds of people were killed in Beirut left a disengagement plan for the warring militias in Lebanon and a Syrian-Lebanese summit beyond reach. There was no political progress.

The Shiite Amal movement released a U.S. professor and a Frenchman who had been kidnapped in West Beirut in February. Page 3

Howe in Peking

British Foreign Minister Sir Geoffrey Howe meets his Chinese counterpart Wu Xueqian in Peking today for the first high-level talks on the future of Hong Kong for more than 18 months. Page 20

Punjab railway fires

Sikh extremists set fire to at least 34 railway stations in dawn raids. Premier Indira Gandhi called an emergency cabinet meeting. Page 3

Spain jails colonels

A Spanish court martial cashiered three colonels and sentenced them to 12 years and a day in prison for plotting a bid to stop the 1982 general election. A fourth colonel was acquitted. Page 3

Berlin air protest

Britain, the U.S. and France protested to the Soviet Union about continuing restrictions on their flights in the three air corridors between West Germany and Berlin. Page 3

Soviet flight inquiry

French military authorities have begun an inquiry into a flight by a Soviet civilian airliner over a secret naval base near Toulon. Page 2

Supplies for Salyut

Soviet Union launched an unmanned spacecraft to take supplies and equipment to the orbiting Salyut-7 space station.

Paris killing

A man was killed and two wounded when a gunman opened fire at a Tunisian restaurant in Paris. Elsewhere in the city three petrol bombs were thrown at offices.

Peace women fined

Twelve women from six West European countries who obstructed building work at a cruise nuclear missile base in Sicily were fined £500 each. The prosecutor asked for light penalties because they acted from 'motives of high moral and social value.' Their 20-day jail sentences were commuted.

South Africa's poor

A South African study into poverty in rural areas, including the 10 tribal homelands, showed widespread hunger and deprivation. A third of black, coloured and Asian children under 14 were stunted by malnutrition, it said.

Lawyers' protest

More than 15,000 Bangladeshi lawyers boycotted the courts to press for a quick end to military rule.

Frankfurt protest

Riot police used water cannon against hundreds of young people protesting against the opening of a new runway at Frankfurt airport. Page 2

Philippines fast

Filipino opposition leader Benigno Aquino, a former cabinet minister, and 25 others launched a week's fast to win support for the campaign to end the rule of President Ferdinand Marcos.

BUSINESS

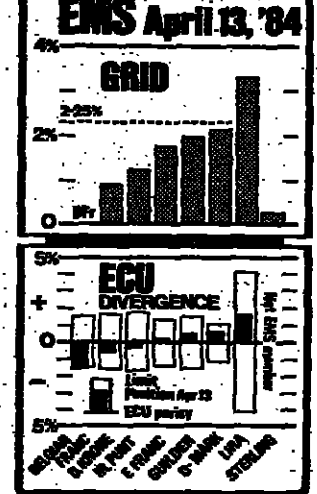
EEC will act on Japanese bearings

EEC is to launch an inquiry into allegations of dumping of Japanese ball-bearings after pressure from European producers. Page 4

PHILIPPINES has imposed an additional 3 per cent duty, above the present 5 per cent, on non-exempt imports. Page 4

BELGIAN franc slipped outside its divergence limit in the European Monetary System last week, but was not under any real pressure.

This was underlined by two reductions in short-term interest rates by the central bank. Interest rates were virtually the same from



a month to a year, reflecting the lack of any clear trend in the market.

The D-Mark was virtually unchanged in relation to its central rate and against the dollar. Consequently movements within the system were confined to a narrow range.

The chart shows the two constraints on European Monetary System exchange rates. The upper grid, based on the weakest currency in the system, defines the cross rates from which no currency (except the first) may move more than 2% per cent.

The lower chart gives each currency's divergence from its 'central rate' against the European Currency Unit (ECU), itself a basket of European currencies.

BRITISH insurance companies had a total net investment to £5.8bn (£5.7bn) in their long-term funds in 1983, £0.5bn up on 1982, insurance column, Page 14

RCA and Hitachi are to press on with plans to promote the CED video disc system in the UK, despite RCA's recent decision to stop making players in the U.S. Page 6

MORGAN GRENFELL, the London merchant bank, is organising a £275m (£260m) British credit for Iraq to buy non-military items. Page 4

NIPPON Telephone and Telegraph, Japanese state-owned, has announced a ¥1,710bn (\$1,660bn) investment programme for the next year. Page 22

DOMS PETROLEUM announced a 1983 loss of £1.1bn (£1,044m), a record annual loss for a Canadian company. Page 22

REUTERS, Britain's world news agency, withdrew from bidding for 20 per cent of private communications group Mercury. Page 20

GAZ DE FRANCE is raising \$100m in the Eurocredit market, the first public borrowing since November by a French state operation. Page 21

AMEC, the UK international civil engineering group, will reveal on Tuesday results of its worldwide investigation into the affairs of its component William Press. Page 9

A 24-hour strike by IG Druck und Papier, the West German print union, at the Financial Times' contract printers in Frankfurt prevented the publication of Friday's international edition.

Moynihan quits committee over Reagan's Nicaragua policy

BY REGINALD DALE IN WASHINGTON AND TIM COONE IN MANAGUA

PRESIDENT Ronald Reagan strongly defended his controversial Central American policies at the weekend by launching one of his sharpest attacks so far on the Sandinista Government of Nicaragua.

After accusing Nicaragua of "covert aggression" against El Salvador and its other neighbours, Mr Reagan said that the U.S. could not turn its back on "this crisis at our doorstep".

Mr Reagan spoke as controversy over the U.S.'s own covert activity against Nicaragua, including American-supervised mining of the country's ports, continued to reverberate through Washington.

Democratic Senator Daniel Patrick Moynihan of New York yesterday announced his resignation as

vice-chairman of the Senate Intelligence Committee, accusing the administration of a "violation of trust" for not informing the committee about the mining operations.

In Nicaragua the key town of San Juan del Norte in the south-east was reported to have fallen to U.S.-backed right-wing guerrillas of the Revolutionary Democratic Alliance (Arde), who are fighting to overthrow the left-wing Sandinista Government.

Arde, based in Costa Rica, claimed that the town and garrison had been taken last Thursday after bitter fighting, including hand-to-hand combat, in which some 1,500 guerrillas had taken part.

It would be the first time that the U.S.-backed guerrillas had succeeded in taking such a key military target in more than two years of fighting.

Its capture would be a boost for President Reagan in his attempts to persuade Congress to approve a further \$21m in military aid for the Nicaraguan counter-revolutionaries.

After Senator Moynihan announced his resignation from the committee, other Republican and Democratic members insisted that they had known of the mining of the ports some time.

Mr William Casey, director of the Central Intelligence Agency, was reported to have told the committee five weeks ago, although only in a

single sentence of a two-hour briefing.

Senator Edward Kennedy of Massachusetts, one of Mr Reagan's leading opponents on Central America, denounced the mining as "illegal, immoral and ineffective."

Mrs Jeane Kirkpatrick, the U.S. ambassador to the United Nations, retorted that the mining was both legal and justified and that to cast Nicaragua in the role of victim was a "complete, Orwellian inversion" of the facts.

Mrs Kirkpatrick warned that if the U.S. did not take "prudent measures" to help Central American countries defend themselves, it could face a major threat to its own security in three to five years that

would require the commitment of U.S. combat forces, the "biggest threat" could come from Soviet deployment of nuclear and chemical weapons in the region, she said.

In his weekly paid radio broadcast, Mr Reagan did not refer directly to the U.S.'s own covert campaign against Nicaragua, including the mining of the ports, which caused an outcry in Congress last week.

His administration was still hoping that the Sandinistas "can be brought back from the brink peacefully through negotiations," he said. He added, however, that given the Sandinista Government's record of repression, we should not wonder that the opposition, denied other

means of expression, has taken up arms.

The main thrust of Mr Reagan's remarks was clearly to justify his decision late on Friday night to rush urgent military aid to the U.S.-backed Government of El Salvador, without waiting for full congressional approval.

Congress adjourned for the 10-day Easter recess on Friday without action in the House of Representatives on Mr Reagan's request for an emergency \$62m in military aid for the hard-pressed government forces.

Mr Reagan invoked emergency procedures under the Arms Export Control Act.

Salvador arms adequate, Page 20

IMF to get delayed \$6bn loan after Saudi deal

BY STEWART FLEMING AND MAX WILKINSON IN WASHINGTON

A LOAN of \$6bn that the International Monetary Fund said it urgently needed last summer to support assistance packages promised to Third World countries appears at last set to go ahead.

The loan had been delayed by demands from Saudi Arabia that its \$3m share should be backed by gold. The other \$3m is being provided by European countries and Japan.

Months have been spent in difficult negotiations over the package, and the Fund appears to have been embarrassed by the delay. Now, however, the Saudis are believed to have accepted a complicated legal guarantee, thus overcoming the impediment.

In the final communiqué from the Fund's interim committee meeting in Washington last week, ministers noted that the \$6bn loan was "in the process of being concluded with the Fund."

Officials and central bankers said the delays reflected the Saudis' traditional caution in financial affairs as well as the IMF's great difficulties recently in obtaining the support it needed from the U.S.

The U.S. has not taken part in the most recent loan, and last autumn Congress threatened to plunge the IMF into a crisis by failing to ratify the U.S. share of a general increase in quota subscriptions.

Although that increase has since been approved by Congress, the Fund is in some doubt how it will meet its financing needs in a year's time.

On some estimates it would need to borrow \$4bn to \$6bn in 1985-86 to back its likely commitments for debt rescheduling and other support to Third World countries.

The amount of financing needed will depend on decisions at the annual meeting in September about how much support member countries should be able to request from the Fund. According to senior officials attending last week's interim committee meeting, a "commitment gap" might open up by the end of this year.

That means that the resources would then be inadequate to cover all future commitments for assistance, although the IMF would almost certainly not be faced with an immediate shortage of liquidity.

The future question, and the uncertainty surrounding some of the largest debtor countries that the Fund is supporting, appears to have been behind the Saudi request for a gilt-edged security for its loan. Although the Fund appears to have been unwilling to provide that, the impasse seems now to have been overcome with a complicated legal guarantee for the Saudis.

Some of the Saudis' reservations appear to be shared by some leading industrial countries, which believe that in the light of the uncertain attitude of the U.S. Congress, they would have to be taken out of capital.

UK bankers say they are annoyed by the Bank of England's attitude, which some see as a new line. But the central bank maintains that the principle has always existed but has not been tested in this way before.

Most banks have more than doubled their general provisions, to the point where they now account for between 5 and 10 per cent of capital. Barclays has £366m (\$438m), NatWest £254m, Midland £244m and Lloyds £243m, but the banks have not said how much relates to shaky foreign loans.

Bankers are concerned that their capital ratios are already under pressure because of the large new tax liabilities caused by the recent

Mauroy to confront Communist partners

By David Housego in Paris

M. PIERRE MAUROY, the French Prime Minister, said last night that the Communists within the ruling coalition were to be asked for a "clarification" of their position towards the Government's policies.

Speaking in a radio interview, M. Mauroy gave the impression that the Government intended to force the Communists to choose between loyalty to the coalition or taking the responsibility for a split. He said that he wanted the Communists to remain in the Government but that he could not accept their "systematic calling into question" of government policy.

M. Mauroy said that there was a lack of coherence in the Communists being members of the Government while at the same time questioning themselves from it in a way that undermined its unity. He said that he and President François Mitterrand would take the appropriate decisions after hearing the Communists' response.

The latest gesture by the Communists that has angered the Government was the unexpected decision by M. George Marchais, the party's secretary-general, to take part in Friday's march by steelworkers in protest at the fresh round of closures in the industry.

This followed the clear warning by President Mitterrand at his press conference the week before that "the time has come to put things clearly."

The Communists have increasingly dissociated themselves from the Government's policies while continuing to participate in the benefits of power. The Communist Party leadership itself has seemed divided on the overall value of remaining in the Government. Their criticism has increased as they have begun preparing their campaign for the European elections in June.

M. Mauroy's warning came during a weekend when the Communist-led CGT union federation, after campaigning against job losses in the steel sector, was preparing to shift the battle to the car industry.

It has promised a "tough" reaction to the announcement by Citroën that it would proceed with plans for making 2,837 employees redundant as part of a reduction in its workforce by 6,000. Citroën, which is part of the Renault group, wants to reduce its 45,000 labour force as a result of accumulated losses of FF 3bn (\$575m) over the last three years.

The CGT has called for a workers' meeting today to decide on action. On Friday, when Citroën confirmed the job losses to a central works council meeting, the union brought production virtually to a halt at the company's Aubry-sur-Bois plant on the outskirts of Paris. A CGT official said that the response would be as "tough" as in 1982 - a reference to the bitter strikes in Citroën's Paris-based plants that year.

Continued on Page 20

British coal strike 'may force more pit closures'

BY DAVID BRINDLE, JOHN LLOYD AND IVOR OWEN IN LONDON

A PROLONGED national miners' strike in Britain would damage many pits beyond repair and their closure would make compulsory redundancies inevitable, Mr Ian MacGregor, chairman of the National Coal Board (NCB), said yesterday.

He said it was "entirely possible" that one in four of the board's mines would be lost if a strike over pay and pit closures continued until the autumn.

Mr MacGregor again made it clear that he had no intention of being deflected from his plans for the closure of 20 pits with the loss of about 20,000 jobs. He said: "There will be no change in the ultimate objectives here."

Asked in view of the likely damage of a lengthy strike, he would still say it was worth holding out, he replied: "Yes, I do say that."

Asked in an independent television interview if he would support the Government stepping in to move coal to power stations in the event of a lengthy stoppage which had the support of rail unions, he replied: "I would think it makes sense to make use of all the stocks that are available."

Mr Arthur Scargill, leader of the National Union of Mineworkers (NUM), interpreted this as Mr MacGregor's backing for the use of troops. He again accused the NCB chairman of "bully boy tactics" and said they would only strengthen the resolve of the miners.

Speculation over the Government's role in the dispute was heightened at the weekend by reports that Lord Trefgarne, a Defence Minister, would join today's meeting of the "inner cabinet" which has been monitoring the strike.



Mr Arthur Scargill

Trades Union Congress for assistance.

The executive council of the National Union of Public Employees decided at the weekend to authorise donations of up to £50,000 from national funds for the NUM, and to consider further help in future weeks.

Overwhelming evidence, both anecdotal and from polls, now suggests that the NUM leadership would get backing for a national strike call and a reasonable majority on a strike vote.

The Government is braced for the likelihood of a national strike being launched after a special NUM delegate conference in Sheffield on Thursday.

Most observers expect the NUM leaders to win the support of the union as a whole which has so far eluded them - expectations backed up by the results published at the weekend of two polls of miners.

One, conducted by the Harris Research Centre for independent television, showed that 55 per cent of miners sampled would vote for a national strike if a ballot was called. Some 33 per cent said they would vote against and 12 per cent were undecided.

The second poll, carried out by Market and Opinion Research International for the Sunday Times, had 88 per cent favouring a strike with 28 per cent against and 6 per cent undecided.

The Harris survey showed that 58 per cent of those questioned were in favour of the proposed change in NUM rules on strike ballots. The change, to be considered by Thursday's conference, would reduce from 55 per cent to 50 per cent plus

Continued on Page 20

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OVERSEAS NEWS

Max Wilkinson and Stewart Fleming assess last week's Interim Committee meeting in Washington

'Don't cry for Argentina—theme for a sombre IMF'

THE RECURRING theme behind the meetings of the International Monetary Fund which ended in Washington this weekend was: "Don't cry for Argentina."

The theme may have been muffled in the formal speeches and the bland tones of communiqué-speak. Nevertheless, Argentina's \$500m debt rescue package, scrambled together by the U.S. and four Latin American countries a fortnight ago set a sombre note for much of the more important private discussions.

As one senior minister put it: "There is a danger that if (the rescue deal) might be read as a softening of the very firm attitude which the international community has taken to debt problems so far... I think there is a risk that a debtor's cartel might be formed."

These fears, shared in different degrees by most of the major European countries, centre on the question of whether the Fund will now be under pressure to patch together a watered down set of economic reforms as the condition for its own assistance to Argentina.

A deal with the Fund would be the "seal of approval" for a more general rescheduling of Argentina's \$43.6bn of foreign debts.

The pressure for the Fund to reach a rapid agreement is undoubtedly strong, since U.S.

banks would have to declare their loans to Argentina non-performing if the country should fail to meet the next deadline for interest payments on June 30.

Last week ministers were worried that the U.S. backed rescue may have appeared to set a precedent for bailing out debtor countries before they have agreed a strict programme of economic reforms with the Fund.

These fears arose partly because the Fund did seem to have given at least some implicit backing to the \$500m rescue to enable Argentina to meet its last debt servicing deadline on March 30.

This came in the form of a progress report by Fund officials on their negotiations with Argentina, suggesting, in the words of one delegate, that "all may be well." It was a sufficient signal for the U.S. to go ahead with its part in guaranteeing a \$300m loan from other Latin American countries.

However, monetary officials stressed last week that the progress report did not have the status of a "letter of intent," the formal first stage of a Fund programme. Moreover, they have said that a disastrous precedent for future debt negotiations might be set if the Fund's authority were seen to be seriously undermined in this case.

This tough position appears to have been endorsed by the major industrial countries and it seems that the U.S. has been given a covert warning to move cautiously in protecting its commercial banks' profits in future—election or no election.

In the ultimate case of a financial shoot-out between debtors and creditors—which most delegates seem to think unlikely—the developed countries apparently feel that

American countries in the \$500m loan was seen as evidence that the Fund's strategy is working to promote mutual self-help among debtors rather than a cartel against creditors.

Mr Jacques de Larosière, the IMF's managing director, said because it showed that "countries in a region with debt problems have arrived at the conclusion that it is better to

when 700 banks were persuaded to provide \$6.5bn.

Herr Karl Otto Poehl, president of the West German Bundesbank, said: "The commercial banks must set about rescheduling, not from year to year, from quarter to quarter or month to month. They have to think about longer term solutions."

The Fund, nevertheless, seems still to favour the relatively short-term "case by case" approach. In essence, it believes that nothing can concentrate the minds of debtor nations so wonderfully as the perception that they are accelerating towards a cliff edge.

On this view, the periodic bouts of vertigo suffered by the financial institutions are a price that must be paid for giving the Fund a continuing opportunity to enforce and monitor reforms in the debtor countries.

However, the Fund has argued that the amount of "new money" which the commercial banks will have to provide should now decline steadily year by year and this should encourage the commercial banks to stay in the ring.

In its latest economic outlook, discussed by ministers last week, the Fund suggests that the ratio of external debt to exports for the major debtor countries might decline from 194 per cent last year to 165 per cent in 1987 and to 150 per cent

Ministers were worried that the U.S.-backed rescue might have appeared to set a precedent for bailing out debtor countries before they have agreed a strict programme of economic reforms with the Fund.

further delays in payments by Argentina might be a lesser evil than a sign of weakening by the Fund.

As one senior banker put it: "In that case, we could only look the Argentinians in the face and say, 'I am sorry, we cannot agree. We are aware of the consequences.'"

Although there is an element of shadow boxing in all this, as there was in the run-up to the Fund's agreements with Mexico and Brazil, ministers did seem to feel the need last week for some sort of strengthening of resolve.

However, the involvement of Mexico, Brazil and other Latin

get together and try to solve their problems."

He added the caution: "This does not mean that this immediate action is the end of the story..."

The "Argentina Question" also highlighted a more general dilemma for the Fund: whether it should continue to stagger from one debt rescheduling crisis to the next or use its influence to promote a longer-term restructuring of debt by stretching out maturities.

One European central banker said he was anxious that the Fund might have difficulty in organising rescues on the scale of last year's help for Brazil

Protests continue for third day over Frankfurt runway

FRANKFURT—Demonstrators and riot police clashed yesterday for the third day at Frankfurt airport's controversial new runway, as about 150 youths tried to run a concrete wall surrounding the runway, set slight petrol canisters and brushwood piled against the wall and threw flares at riot squads. Police used water cannon to extinguish the fires and then turned them on the demonstrators.

Police said between 250 and 300 turned up at the airport, the second busiest in Europe after London's Heathrow. On Saturday, 20 police officers and several demonstrators were injured when protesters threw petrol bombs and petrol bombs at riot squads. Organisers said an estimated 10,000 people took part in the action which resulted in the arrest of 13 demonstrators.

Earlier, as the protesters walked yesterday in bright sunshine along the barbed wire-topped concrete wall bordering the runway, light security was in evidence. Water cannon were positioned inside the barrier while mounted police and foot patrols were on duty.

As the demonstrators mingled with a few amateur plane spotters and families on Sunday outings, the only sign of the earlier protest were tattered balloons, released in an unsuccessful attempt to disrupt air traffic and the smell of tear gas in nearby woods.

The protests are the latest in 20 years of court battles and sometimes violent demonstrations against the runway, built at a cost of DM 250m (\$84.5m) including DM 25m for the wall, police watchtowers and other security measures.

Some 1,000 detentions have been made since plans for the project were first proposed in the mid-1960s. The names of those detained yesterday have not been released.

Opponents of the runway say it will damage nearby woods and increase aircraft noise in villages on the flightpath. Airport authorities say the new runway, used only for take-off, is needed to relieve pressure at peak periods.

Reuter

French inquiry over stray Soviet aircraft

TOULON—French military authorities have begun an inquiry into a flight by a Soviet civilian aircraft over a secret French naval base.

An Aeroflot Tupolev 134 entered prohibited airspace over the Toulon naval base on Friday, and apparently ignored several warnings from civilian air traffic controllers that it had diverted from its approved flight path into a restricted area, which contained France's first nuclear attack submarine Rubis and the aircraft carrier Foch, both of which were in dock.

The aircraft apparently went off course shortly after being given permission to begin its descent towards Marseilles and then made

three slight adjustments which brought it directly over the naval base, before landing 20 minutes later.

There have been similar incidents involving Aeroflot planes in the past, notably during test firings of missiles from a French military base on the island of Levant off Toulon.

It is thought unlikely that the Soviet pilot was on a spying mission, since he knew his aircraft would probably be searched by French authorities on arrival. The more likely explanation is that he wanted to test France's military reaction to such an incursion and to monitor its defence radar frequencies.

Reuter

Hart wins Democratic caucuses in Arizona

BY REGINALD DALE, U.S. EDITOR, IN WASHINGTON

SENATOR—Gary Hart won the weekend's Democratic caucuses in Arizona, taking his hopes of winning his campaign for presidential campaign in the West.

Mr Hart won 45 per cent of the vote against 40 per cent for his main rival, former Vice-President Walter Mondale.

The vote translated into 17 delegates for Mr Hart at July's 3,853-member national convention held in San Francisco against 15 for Mr Mondale and one for the third remaining candidate, the Rev Jesse Jackson.

Mr Mondale's campaign staff conceded their Senator Hart, who comes from Colorado, was

clearly a well-placed to win western votes but added that he had spent much more than Mr Mondale in Arizona.

Mr Jackson won his first clear-cut victory in the battle for delegates in his native state of South Carolina, where the state Democratic convention gave him 34.4 per cent support.

A number of uncommitted delegates voted earlier in the state primary switched to Mr Jackson to give him a delegate count of 17. Fourteen South Carolina delegates remained uncommitted with seven for Mr Hart and six for Mr Mondale.

Texas scraps evolution rule for textbooks

DALLAS—The Texas Board of Education has voted to cancel a rule that restricted mention of the theory of evolution in state-approved textbooks.

The board, meeting in El Paso, voted after Mr Jim Mattox, Texas Attorney-General, told board members that the 10-year-old rule was unconstitutional.

The rule required science textbooks to identify Charles Darwin's theory of evolution "as only one of several explanations of the origins of humankind."

The rule also required that evolution be written about in the textbooks "in a manner not detrimental to other theories of origin."

But in striking down the rule, the 27-member board also approved a new regulation to appease Creationists who believe in the Biblical story of the origin of humankind, and want their beliefs included in state-approved school books.

The new regulation will require publishers to state that evolution is theory, not fact.

The rule also required that ridiculous position, and we had to eliminate it," Mr Will Davis, a board member said.

Mr Davis and another board member, Mrs Virginia Curry, sought to overturn the old rule, to encourage textbook publishers who had avoided a full discussion of evolution and other Creation theories.

"I hope the textbook publishers will get the message they have nothing to worry about," Mrs Curry said.

Tentative approval to overturn the evolution rule was granted on Friday in a 23-2 vote. The board formally approved the resolution in a verbal vote on Saturday.

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OVERSEAS NEWS

Sikh extremists set fire to 30 railway stations in Punjab

BY K. K. SHARMA IN NEW DELHI

AT LEAST 30 railway stations in the north-western Indian border state of Punjab were set on fire soon after midnight yesterday, adding a new and ominous dimension to the two-year-old agitation by Sikhs for religious and political autonomy. Although no casualties were reported, the arson was thought to have been caused by Sikh terrorists in an attempt to escalate the tension at a time when the Sikh leadership appears to be sharply divided. The Indian Government, which has taken direct control of the administration in Punjab, views the latest developments very seriously. Additional railway protection security forces were hastily despatched yesterday to help the state authorities. More attacks on the railways are feared since the terrorists have acted in a planned and co-ordinated manner all over Punjab. The arson in all 30 stations followed a similar pattern. An unsuccessful attempt was also made to derail a train.

Pledge on Tamils conflict

BY OUR NEW DELHI CORRESPONDENT

SRI LANKA'S Minister for National Security, Mr Lalith Athulathudali, said here yesterday his government was committed to finding a political solution to the ethnic conflict in his country. Mr Athulathudali is in New Delhi to explain the Tamil situation in Sri Lanka where nearly 40 Tamil "terrorists" were killed by security forces last week in and around Jaffna in the north where the Tamil population is concentrated.

The clashes followed the collapse of negotiations between the Government and Tamil representatives on the latter's demand for autonomy. The negotiations were held with the help of the Indian Government. Mr Athulathudali arrived in New Delhi on Friday for talks with Indian ministers following fears among Indian Tamils that the Sri Lanka Government had decided to crack down on "terrorists" and had given up hopes of finding a solution through negotiations.

Kampuchea base overrun

BANGKOK—Tank-backed Vietnamese troops yesterday won control of an important base of the Khmer Peoples' National Liberation Front near that Thai-Kampuchean border, according to Thai military officials. They said that 50 civilians had been killed and many more wounded, including 35 who they said had suffered skin burns from poison gas. Earlier Prasong Soonsiri, secretary-general of Thailand's

National Security Council, said the Vietnamese attack had forced thousands of Kampuchean refugees across the border into the Thai province of Aranyaprathet. The Thai military said there was still sporadic fighting between the guerrillas and Vietnamese troops. About 2,000 Vietnamese troops took part in the fighting, they said.

Spain jails 3 colonels over coup plot

By David White in Madrid

THREE of the army colonels accused of plotting a pre-election coup d'état in Spain in 1982 received statutory 12-year prison sentences yesterday after a five-day court martial. But the military tribunal called on the Government to commute the sentences to four years. The fourth defendant was acquitted.

The three convicted artillery officers, Col Luis Munoz, Col Jesus Crespo Caspimera, and Lt/Col Jose Enrique Crespo Caspimera, who were all found guilty of conspiracy to rebel, are to appeal to the Supreme Military Court.

The sentence of 12 years said a day is the minimum laid down for conspiracy convictions. The court said there was no proof that the fourth man, infantry Lt/Col Juan Fernandez Hidalgo, participated in the plot.

Sr Eduardo Sotillos, chief Government spokesman, said no official statement would be made on the sentence.

However, it is bound to revive debate about the capacity of military courts to deal resolutely with cases of this kind. This debate came to a head two years ago with a public scandal over the sentences initially handed down against the leaders of the spectacular coup attempt of February 1981. The sentences were subsequently increased. The five-man military tribunal said the 12-year minimum sentence, which was introduced after the 1981 revolt was "excessive" in the circumstances. The sentences imply automatic dismissal from the army although the men stand to receive 80 per cent of their pay.

The court said the three men had agreed on a blueprint plan for the violent overthrow of Spain's political system and installation of a military régime, under which unions would be disbanded, regional autonomy statutes cancelled, and news media placed under control.

The defendants maintained that their plans were simply a "theoretical tactical exercise."

Hopes fade for Lebanon disengagement plan

BY NORA BOUSTANY IN BEIRUT

A DISENGAGEMENT plan to separate the warring Lebanese militias and hopes of a Syrian-Lebanese summit appeared to be shattered yesterday following a weekend of untempered violence and no progress on the political front.

On Saturday haphazard shelling of residential areas by gunners in Christian East and Moslem West Beirut left 20 people dead and many more wounded.

The President's living quarters at the Baabda Presidential palace received direct hits. There was extensive material damage but no one was hurt.

Meanwhile, only 1,250 men signed up for a badly needed disengagement force composed of Lebanesegendarmes and retired army officers to act as a buffer separating the fighters. The plan had required 2,000.

Officials' and politicians' efforts to deploy a police force as a buffer between Christian militias and the Lebanese Army on the one hand and Moslem and Druze fighters on the other had also yielded no concrete results by the week's end.

Lebanese Christians did not celebrate Palm Sunday yesterday with the usual outdoor pro-

cessions under instructions from their church leaders apprehensive of continued shelling. April showers, discouraged the habitual outbursts of artillery duels, early in the day, but the relative calm was shattered in the late afternoon when several shells slammed into East Beirut and other Christian areas.

As security conditions deteriorated, several Moslem opposition leaders declared they favored the return of a Syrian deterrent force to help pacify Beirut.

There were no clear signals from Damascus that wishes for a Syrian peacekeeping force

would be granted. However several travellers reaching Lebanon by land from Syria over the past two days said they saw Syrian trucks and armoured personnel carriers painted white with "Peace-keeping forces" written on the side.

Analysts here discounted the importance of such preparations saying Syria would not embark on such a move without the necessary regional political cover.

Israeli Defence Minister Moshe Arens called for a separation of Syrian and Israeli forces in Lebanon on Saturday saying that international peace-keeping

troops should be deployed in eastern Lebanon's Bekaa Valley. Renter reports from Tel Aviv. His statement seemed to indicate a change in Israel's policy of refusing to move from its Bekaa defence line, from which Damascus (23 km away) is in range of Israeli guns.

The Shi'ite Amal movement yesterday released an American professor and a French citizen who were kidnapped in mainly Moslem West Beirut last February. Prof Frank Regier is an engineering instructor at the American University of Beirut and M Christian Jobert worked for a French company in the city.

BP likely to bid for more China oil leases

By Mark Baker in Peking

BRITISH Petroleum has indicated that it is likely to bid for additional Chinese offshore oil exploration leases, and it has reaffirmed its confidence in the potential of its existing lease blocks.

Mr Mike Yeldham, an assistant general manager of BP Petroleum Development in Canton, has rejected reports suggesting BP is concerned about the poor results of its drilling so far in the South China Sea.

China announced last week that a second round of bidding would begin soon and the "model contract" on which bids are made was being revised.

Of three wells drilled since last November, by the BP-led consortium, one had very little oil flow and two have been dry. Work on a fourth well has been proceeding for about a month. Mr Yeldham said the consortium's drilling plans were proceeding normally and work was expected to begin next week on the first well, which contained oil, in its lease area in the South Yellow Sea.

After three wells there is no way that anyone can draw conclusions, so we can't be pleased or disappointed. It would be extraordinary lucky if we hit oil in one of the first wells we drilled," he said.

Drillers for a joint venture involving China, the Royal Dutch-Shell group and Exxon have found evidence of crude oil in their first well in the South China Sea, reports AP-DJ from Peking.

Mugabe denies church's claims of brutality in Matabeleland

BY OUR HARARE CORRESPONDENT

MR ROBERT MUGABE, Zimbabwe's Prime Minister, has denied allegations by the country's Roman Catholic leaders and international newspapers of security force brutality against the minority Ndebele people in Matabeleland Province at the weekend. He later accused the Roman Catholics of supporting the opposition party of Mr Joshua Nkomo.

The Prime Minister claimed the Roman Catholic church had decided to "counter successful Government activities" because they were directed against institutions of Joshua Nkomo which "have been sustaining more dissidents."

Mr Nkomo's Zapu party, which relies almost exclusively on the Matabele people for its support, denies any links with the anti-Government dissidents who have been waging a guerrilla campaign against the Mugabe Government.

Mr Mugabe, making his first visit to the troubled Matabeleland area for nine months, said his Government had been handed the church report, detailing atrocity allegations, on April 2.

The four-page report accuses the Mugabe Government not just of beatings and killings of civilians, but also of a deliberate policy of starvation. Soldiers had told villagers that they must first bring dissidents to the security forces before they could expect any food, the report says.

The Government relaxed its curfew restrictions in Matabeleland last week, saying that the security position had eased and yesterday, Zimbabwe's main weekly newspaper, which has not reported the church's allegations, quoted Mr Mugabe's assertion that the military situation was improving.

The report claims that many villagers have been taken away for interrogation and not seen since, while others had been tortured by electric shock. One minister "had a list of 22 people killed by security forces in the past two months alone."

"Grave concern"

In their report, the seven bishops say: "We wish to express our grave concern about the starving people in Matabeleland South arising from the continuing conditions of starvation, beatings of people, torture and killings."

The report accuses the army commanders of giving the impression that it is army policy to make all the people in the area suffer because of the dissidents.

It calls for the lifting of the dawn-to-dusk curfew, that all rural stores be allowed to restock with foodstuffs, that the Government undertake a serious political dialogue with the minority opposition Zapu party, and that a government Minister tour the region with independent observers.

Mr Mugabe's outright rejection of the report suggests there is little prospect of his adopting any of its recommendations. His own political morale was given a boost at the weekend with the announcement that the ruling Zanu-PF party.

This morale-boost is much needed on the eve of the fourth anniversary of Zimbabwe's independence, and at a time when the Prime Minister is being assailed by the minority political parties over his human rights performance and by farmers and business leaders over his management of the economy.

Bishop Abel Muzorewa's United African Nations Council also attacked the Government at the weekend, issuing a sharply critical statement calling for the release of the bishop who has been detained without trial since October last year, and whose case has still not apparently been referred to the detainees review tribunal.

While Mr Nkomo's defection is hardly a surprise—since he has made little secret of his disapproval of Mr Nkomo's leadership—there is speculation that other Zapu Ministers will follow his lead.

This is rejected by Nkomo loyalists who argue that it is those Zapu moderates who are trying to remain in the Mugabe Cabinet who are out of touch with grassroots party feeling in Matabeleland.

Allies in fresh protest over Berlin air curbs

By Leslie Colitz in Berlin

THE THREE Western allies in West Berlin have protested to Moscow for the second time in recent weeks over continuing restrictions on allied flights in the three air corridors between the city and West Germany.

In a co-ordinated move, Britain, the U.S. and France told the Soviet Union of their concerns over the limitations imposed on the altitudes at which allied aircraft fly in the air corridors to Berlin over East Germany which have been reserved for them since the end of World War II.

Mr Peter Boon, British spokesman in West Berlin, said the allies took up the matter with the Soviet ambassadors in their capitals late last week. He noted that they also voiced their displeasure to the Soviet officials in Berlin.

Last week Herr Eberhard Diepgen, West Berlin's governing mayor, said after talks in Washington with President Reagan and senior U.S. officials that they were "very concerned" about the restrictions.

Mr Lawrence Eagleburger, U.S. Deputy Secretary of State, lodged the U.S. protest with Soviet Ambassador Mr Anatoli Dobrynin, on Thursday.

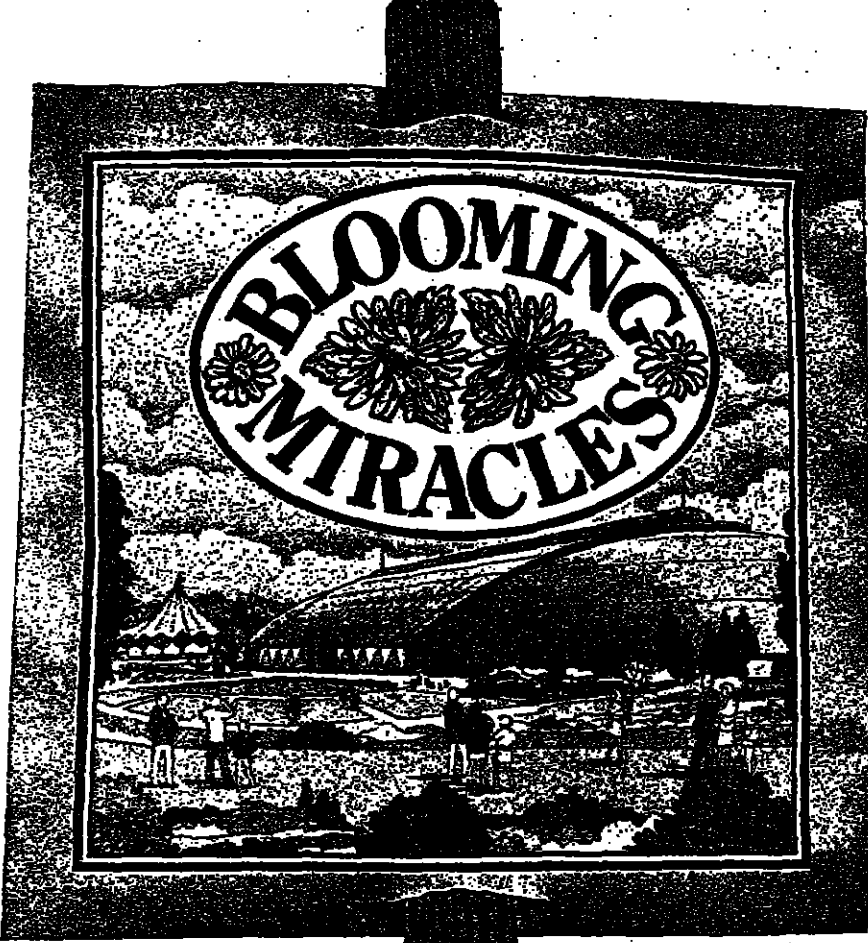
Allied officials said the chief Soviet representative in the air safety centre in West Berlin informed his Western counterparts several times last week, that because of Warsaw pact air manoeuvres in the air corridors, he "recommended" allied aircraft to fly at certain altitudes to avoid collisions.

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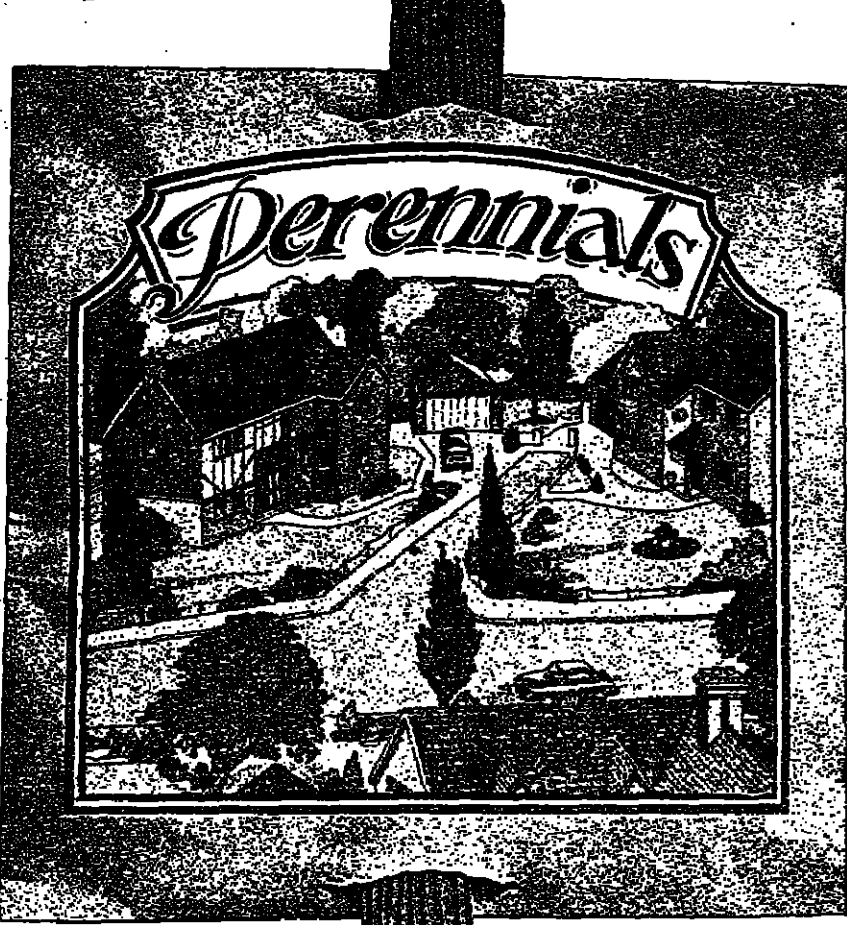
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Merseyside Development Corporation

TURNING THE TIDE ON MERSEYSIDE

Contact Alex Anderson, Merseyside Development Corporation. Tel: 051-236 6080.

WORLD TRADE NEWS

EEC inquiry into Japan bearings 'dumping'

By Ivo Dawson in Brussels

THE EEC is to launch an inquiry into allegations of dumping by Japanese ball bearing manufacturers after coming under intense pressure for action from Community producers.

The investigation, which is expected to be announced next week, follows two earlier EEC investigations of the market in the 1970s. These ended with negotiated settlements with the Japanese who agreed to regulate the pricing of their EEC exports.

Last month the European Commission imposed anti-dumping duties of up to 37.5 per cent on miniature ball bearings produced in Japan and Singapore. The new six month long inquiry, which will cover all bearings with diameters over 30 millimetres, begins a procedure that could end in similar action against imports.

Latest Commission figures showed that Japanese manufacturers held 11.5 per cent of the total EEC market, rising to 14.4 per cent in the volume market, primarily the motor industry.

The greatest penetration was found in West Germany and the UK where the Japanese market share had risen to about 16.5 per cent with prices averaging out at 20 per cent lower than their European competitors.

The Federation of European Bearings Manufacturers Associations has pointed out to the Commission that EEC producers have cut their workforces by 9 per cent since 1979, but cannot compete with prices sometimes as much as 84 per cent below cost.

The Commission is also expected to announce measures to monitor the sales of Japanese quartz watches to the EEC, after allegations that negotiated quotas are being exceeded.

David Hellier looks at some of the world's more prestigious export awards
Star exporters vying to join the Oscars

EXPORTING can be a financially rewarding business, but it can also be the source of important awards given by major national institutions to those who are most successful at it.

In the UK, the latest recipients of the Queen's Award to Exports will be announced on Saturday. About 90 companies receive the award each April — and there are usually nearly 10 times as many applicants as there are winners.

Its prestige, not just within the UK but overseas as well, makes it a valuable bonus for exporters.

Less well-known, perhaps, are the export award ceremonies held in other countries. The South Koreans, for example, who have little difficulty in exporting, hold an Export Day each November, in which the year's most prolific export companies receive miniature stainless steel towers from the President as a token of honour.

The height of the towers, usually around 20 inches, depends on the company's export turnover during the previous year.

Last year's tallest tower went to Hyundai, one of South Korea's biggest conglomerates.

In the U.S., companies are given "E" awards, which comprise a flag with a big "E" (for export) inscribed on it and a scroll. About 50 firms, nominated by District Export Departments, receive the award annually.

Mr Michael Mercurio, U.S. Commercial Attaché in London, says of the "E" scheme: "It's a very nice thing for the companies involved, but in the overall scheme of things it does not have the same kind of visibility that you have for your awards here."

In Sweden, the major competition, Exportlift is sponsored by the Swedish Trade Council and SAS, the national airline. It rewards just one company each year with prize money of around \$3,000 and guaranteed publicity in the Swedish Trade Council magazine. A second competition, the Swedish Export Championship, rewards personal export achievements. It is sponsored by Swedish banks and an association of Swedish companies. The competition winner is invited on a trip to the Far East.

The French have their own Oscar ceremony for exporters (Oscar de l'exportation), held each December in Paris. Organised by the journal "Le nouvel économiste" and the French Trade Department, the Oscars are divided into 10 different categories.

As for Japan, it is not exporters that receive awards but importers. In an attempt to show the rest of the world that they are trying, the Japanese introduced the importers' awards last June, when six companies were honoured by Mr Yasuhiro Nakasone, the Prime Minister. Among the winners were Jardine Matheson, the Hong Kong trading company, and Burroughs, and Procter and Gamble of the U.S.

In addition to the six outright winners, 15 other companies were recommended for their import achievements, and these included five non-Japanese businesses.

Few countries, however, seem to have the same kind of prestige attached to their awards as the Queen's Award has in Britain.

Mr David Royce, director general of the Institute of Export, thinks that the Royal honour still holds great weight across the world, especially in countries where the Crown's influence is strong.

David Royce: "A way of gaining prestige."

"Certainly firms which have won awards are by no means backwards in coming forward and saying that they've won them."

"They're a way of gaining prestige, and people know they're not handed out on a plate."

"A measure of their value is



David Royce: "A way of gaining prestige."

given by the kind of people who apply for them in a sector of the economy which is known to be one of the most efficient."

But he did give a warning to those who constantly pump out the "export or die" message to British industry.

"I think we must be balanced in our euphoria for exporting. Imports are also important, and certainly our standard of living would go down if these fell too dramatically."

If the Japanese can reward their importers, what about the British?

Mr Ray Skelton, secretary of the British Importers' Confederation, has long ago resigned himself to the inevitable. "I can't see anybody giving awards to importers," he said. "It gets a bit depressing at times, but I think that importers accept things as they are. However, we do aim to educate people so that they do not just think of the import-export business in black and white terms."

Some of our importers are probably amongst the most efficient businesses in the country. They provide the consumer with a wider range of products and at lower prices. The importer is not a ogre he appears to be."

Trade keynote of Thatcher visit to Portugal

BY DIANA SMITH IN LISBON

ANGLO-PORTUGUESE trade, which shifted in Portugal's favour last year, will be a keynote of Mrs Margaret Thatcher's official visit to Portugal from April 17 to 19.

The first British prime minister to come to Portugal — Britain's oldest formal treaty ally — since 1910, Mrs Thatcher is likely to register the keen interest of British concerns in getting orders in areas where the Portuguese plan to invest

heavily: nuclear energy, telecommunications, digital switching, computerisation in government and finance, coal-fired power stations, a gas pipeline which Portugal hopes one day to link to new European pipelines, and modernisation of Lisbon's antiquated, defective sewage.

As Portugal's number one trading client fourth supplier of goods and commodities, Britain has fought to maintain its position in recent years against increasingly aggressive competition from France and West Germany.

The restored competitiveness of the escudo after hefty 1983 devaluations and more energetic marketing by Portuguese textile manufacturers put trade with Britain into the black for Portugal for the first time in 1983. Then, exports to the UK, mainly textiles and clothing, footwear, lumber and wooden

furniture, cork, pulp and waste paper, beverages (including port wine), office machines and electric equipment, totalled \$476m, compared with \$380m in 1982 and \$333m in 1981. Last year Britain exported \$597m to Portugal compared with \$429m in 1982 — giving Portugal a trade surplus of \$79m.

The main reason for the drop in British exports seems to have been decreased sales of vehicles and components.

By Robert Cottrell in Tokyo

AUSTRALIA and Japan plan more talks on bilateral trade, starting May 10, following the failure of a preliminary round last week. The fresh round of talks was agreed over the weekend at a meeting in Tokyo between Mr Shinjiro Yamamura, Japan's Minister of Forestry and Fishing, and Mr John Kerr, Australia's primary industry minister, who arrived in Japan on Thursday.

The talks with Australia follow the agreement reached between Japan and the U.S. last weekend to increase Japanese beef imports from the U.S. from 30,000 tonnes annually to 58,400 tonnes annually over the next four years. Australia is anxious to secure an understanding from Japan that its own share of Japan's 141,000 tonnes-per-year total beef imports is not reduced.

Fresh Tokyo Australian beef talks

By Robert Cottrell in Tokyo

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A fair volume has been compared with West Africa. A 100,000 ton tanker was fixed to the Mediterranean at Worldscale 38.

Rates have tended to drop for cross-Mediterranean and Mediterranean-Europe cargoes. Worldscale 50 being paid for one recent cargo to Europe.

In the sale and purchase market, there was a flurry of interest in tankers, with one Greek owner purchasing three charter tankers that have been laid up in Norway.

Manila moves to stem imports

By Emilia Tagaza in Manila

IN A move designed to cut Philippine imports to the "barest minimum," the Government has imposed an additional 3 per cent duty, above the present 5 per cent, on all non-exempt imports. Exempt imports include those of Government agencies or those organisations exempted under special laws.

The additional duty is one of the conditions set by the International Monetary Fund (IMF), with which the Government is negotiating a \$600m standby credit.

The IMF facility is crucial as it is expected to trigger the stalled negotiations with foreign creditors.

Britain plans £275m Iraq credit line

BY CHRISTIAN TYLER, TRADE EDITOR

MORGAN Grenfell, the London merchant bank, has secured the mandate for a £275m general line of credit that Britain is underwriting for Iraq.

The credit, said to be the first of its kind for Iraq, is the result of an agreement by the Anglo-Iraqi Joint Trade Commission last autumn. According to the bank, the protocol signed then states that the loan cannot be used for the purchase of military equipment to help Iraq prosecute its long war with neighbouring Iran.

Some £25m is earmarked for commodity purchases, the rest for civil projects in which British companies stand a good chance of winning major orders.

These projects include water and power supply and oil and gas development for which Iraq will be placing contracts for capital goods and services.

The credit is guaranteed by the Export Credits Guarantee Department and is available for orders won before the end of this year.

Morgan Grenfell said it had been approached following its lead role in last year's credit-for-oil agreement to refinance overdue payments on existing construction contracts in which British firms were involved. Until recently, when the war began to take its toll, Iraq paid cash for most imports out of its substantial oil revenues.

Ankara company to build F16 assembly plant

BY DAVID BARCHARD IN ANKARA

TURKEY's state aviation corporation, TUSAŞ, has awarded a contract for TL 50m (\$100m) to build an F-16 assembly plant near Ankara for the assembly of F-16 fighters.

The award of the contract is the first clear signal that the Government is pressing ahead with its \$4.2bn deal with General Dynamics of the U.S. to assemble and co-manufacture TL 250m (\$50.1m).

The new deal government is known to be privately less than keen about the project, now known as the "F-16 aviation with General Dynamics cooperation" project.

TUSAŞ and General Dynamics last month set up a joint venture to handle the project, now known as the "F-16 aviation with General Dynamics cooperation" project.

The joint venture is to assemble and co-manufacture TL 250m (\$50.1m).

WORLD SHIPPING REPORT
Charter market edges up

FINANCIAL TIMES REPORTER

FEW new charters have been reported this week, but the market has firmed up slightly as a number of transactions have been concluded on a confidential basis.

Of these fixtures reported, a 220,000 tonne vessel was taken to Taiwan from Ras Tanura at Worldscale 27.75 while the premium for loadings from Iran is about 5 to 6.

A fair volume has been compared with West Africa. A 100,000 ton tanker was fixed to the Mediterranean at Worldscale 38.

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World Economic Indicators

	TRADE STATISTICS	Jan '84	Feb '84	Mar '84	Apr '84
Japan \$bn	Exports	13.95	13.73	13.42	11.63
	Imports	11.45	11.40	11.05	10.18
	Balance	+2.50	+2.33	+2.37	+1.45
UK \$bn	Exports	5.46	5.54	5.44	4.85
	Imports	4.57	4.34	4.36	4.08
	Balance	+0.89	+1.20	+1.08	+0.77
U.S. \$bn	Exports	17.21	18.33	17.30	16.31
	Imports	24.15	24.59	22.98	18.80
	Balance	-6.94	-6.26	-5.68	-2.49
W. German DMbn	Exports	41.15	36.54	40.83	32.16
	Imports	34.38	34.42	34.73	29.42
	Balance	+6.77	+2.12	+6.10	+2.74
France FFbn	Exports	62.80	64.89	67.44	62.77
	Imports	67.40	74.34	67.44	60.38
	Balance	-4.60	-9.45	0.00	+2.39
Italy Lira	Exports	8,575	10,746	10,353	7,530
	Imports	10,011	10,488	10,781	6,700
	Balance	-1,436	+2,258	-428	+830

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- Total assets DM 160 billion
- Capital and reserves DM 4.5 billion
- Operating results exceed DM 2 billion
- Net income DM 380 million

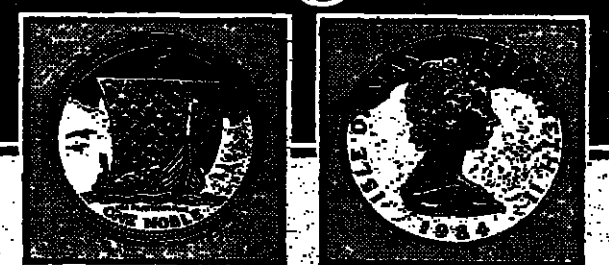
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Worldwide Consolidated Accounts

1983

Dresdner Bank

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One troy ounce of solid Platinum — at little more than bullion price

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Not surprisingly, the new Noble is already an outstanding success in Europe, where leading Swiss financial advisers have long been advocating that a minimum of ten percent of capital be put into tangible, tradable bullion assets.

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The growth that has seen the new Noble appreciate by 5.3% in only three months seems poised at least to continue, if not to accelerate.

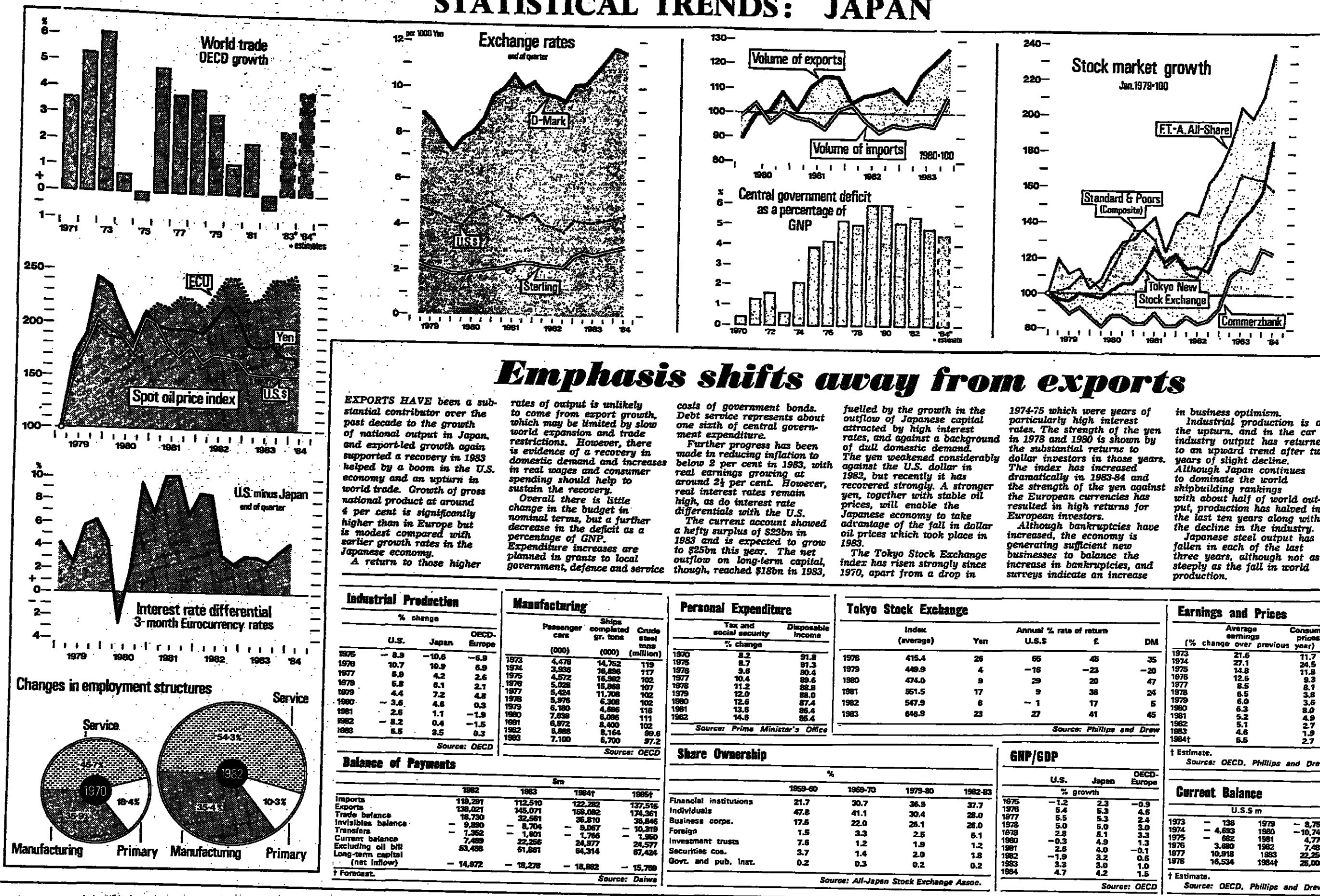
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STATISTICAL TRENDS: JAPAN



Emphasis shifts away from exports

EXPORTS HAVE been a substantial contributor over the past decade to the growth of national output in Japan, and export-led growth again supported a recovery in 1983 helped by a boom in the U.S. economy and an upturn in world trade. Growth of gross national product at around 4 per cent is significantly higher than in Europe but is modest compared with earlier growth rates in the Japanese economy.

A return to those higher rates of output is unlikely to come from export growth, which may be limited by slow world expansion and trade restrictions. However, there is evidence of a recovery in domestic demand and increases in real wages and consumer spending should help to sustain the recovery.

Overall there is little change in the budget in nominal terms, but a further decrease in the deficit as a percentage of GNP. Expenditure increases are planned in grants to local government, defence and service

costs of government bonds. Debt service represents about one sixth of central government expenditure.

Further progress has been made in reducing inflation to below 2 per cent in 1983, with real earnings growing at around 2 1/2 per cent. However, real interest rates remain high, as do interest rate differentials with the U.S.

The current account showed a hefty surplus of \$23bn in 1983 and is expected to grow to \$25bn this year. The net outflow on long-term capital, though, reached \$18bn in 1983, fuelled by the growth in the outflow of Japanese capital attracted by high interest rates, and against a background of dull domestic demand.

The yen weakened considerably against the U.S. dollar in 1983, but recently it has recovered strongly. A stronger yen, together with stable oil prices, will enable the Japanese economy to take advantage of the fall in dollar oil prices which took place in 1983.

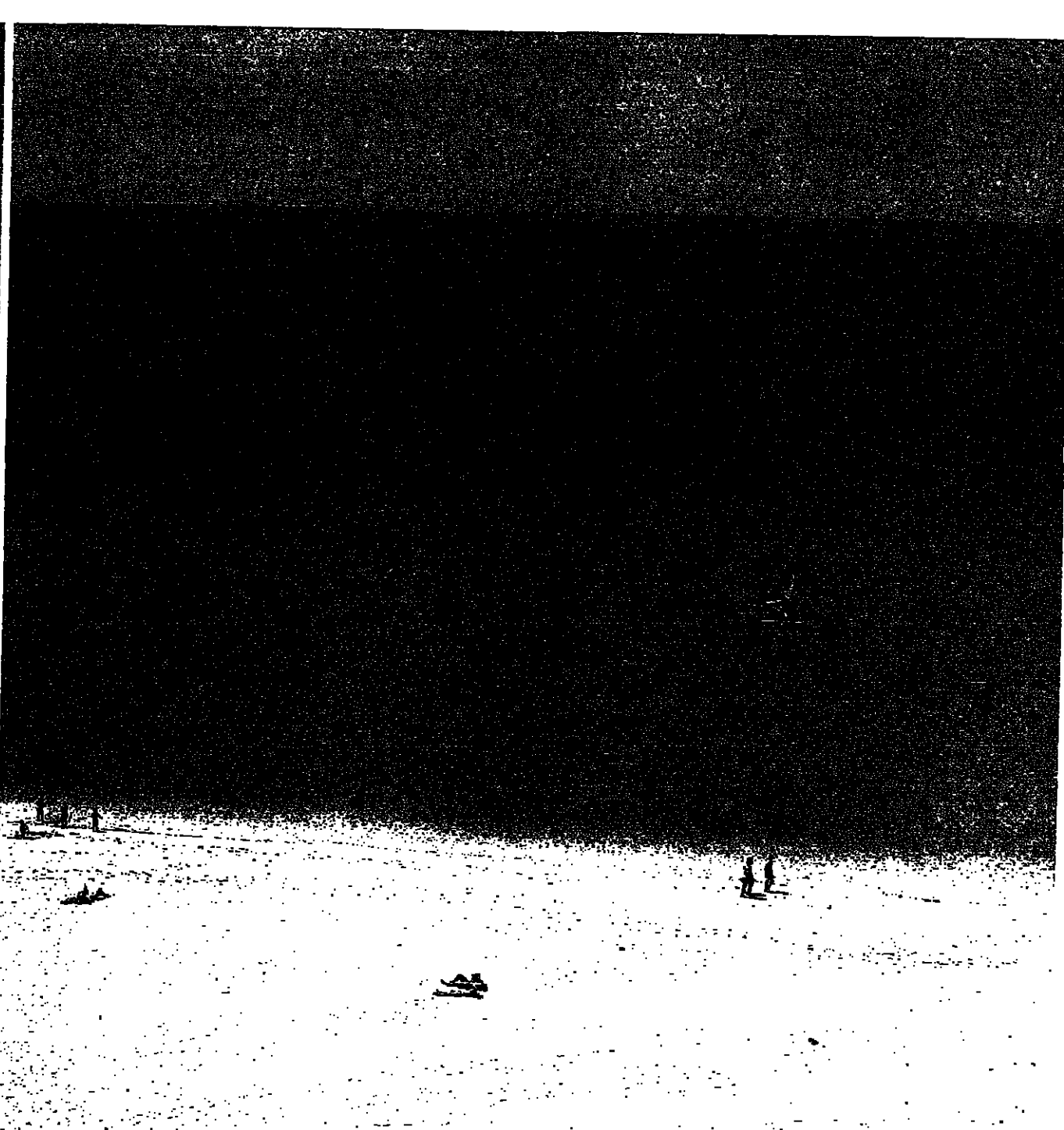
The Tokyo Stock Exchange index has risen strongly since 1970, apart from a drop in

1974-75 which were years of particularly high interest rates. The strength of the yen in 1978 and 1980 is shown by the substantial returns to dollar investors in those years. The index has increased dramatically in 1983-84 and the strength of the yen against the European currencies has resulted in high returns for European investors.

Although bankruptcies have increased, the economy is generating sufficient new businesses to balance the increase in bankruptcies, and surveys indicate an increase in business optimism.

Industrial production is on the upturn, and in the car industry output has returned to an upward trend after two years of slight decline. Although Japan continues to dominate the world shipbuilding rankings with about half of world output, production has halved in the last ten years along with the decline in the industry.

Japanese steel output has fallen in each of the last three years, although not as steeply as the fall in world production.



Where are all the tourists?

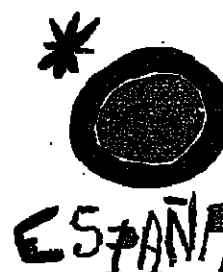
They're five minutes drive from here, at one of the busiest, most popular beaches in Spain. One reason why so many people come to Spain, and come back year after year, is that we have so many secluded spots like this beach. Pick one for yourself and make it your own.

There are countless deserted coves along our coasts. There's peace and quiet inland, too. Up the mountainsides, just a short drive from some of our best-known beach resorts, are ancient villages sleeping alone and still as lizards in the sunshine. Go and discover one.

Leave your car outside the high white village walls. The streets will be too narrow for it, and sometimes they become steps. There will be a church and a small square. There will be tables outside a café. Sit, sip some wine and listen to the quiet.

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New Issue

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\$1,200,000,000 Callable Treasury Receipts
\$2,232,000,000 Coupon Treasury Receipts

\$750,000,000
U.S. Treasury Bonds of 8-15-13/08

Treasury Receipts (TRs) evidence ownership of future interest and principal payments on certain United States Treasury Notes or Bonds ("Treasury Securities"). Such interest and principal payments are direct obligations of the United States of America. The Treasury Securities will be held in custody by State Street Bank and Trust Company on behalf of the holders of the related TRs.

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To obtain further information contact the undersigned.

Paine Webber Capital Markets

Insolvency rules 'may deter directors'

By Alison Hogan

THE INSTITUTE of Directors has given a warning to the Government that "honest and competent directors" will be deterred from joining companies if proposed reforms of the insolvency law are passed.

"No amount of change to company law will eliminate rogues completely, and it is essential that any legislation does not carry with it unfortunate side effects for honest and competent directors," the institute says in its submission on the recent White Paper (policy document) on changes in insolvency law.

Tough penalties are proposed against directors of a company which is judged to have been "wrongfully trading," including the automatic disqualification from being a director of any other company. The institute feels that penalties should apply only to controlling directors who have a majority equity stake in the company.

"Directors will not be prepared to serve if, unlike other professionals, they are called upon to accept personal liability not only without limit but also without proof of fault," it says.

It could result in skilful and careful directors no longer offering their services to companies in most need of them, "namely those whose viability is in doubt."

Directors would also be under a personal pressure to ensure that companies were wound up at the first sight of trouble.

The institute says that this was completely at variance with the basic principle of a recent Cork committee finding on insolvency that a business should be kept going as long as possible.

RCA and Hitachi continue to promote videodisc systems

BY JASON CRISP IN LONDON

RCA and Hitachi are to carry on with plans to promote the CED videodisc system in the UK in spite of RCA's recent decision to stop making players in the U.S.

RCA Videodiscs, the UK subsidiary of the U.S. broadcasting publishing and electronics giant, plans to spend over £1m promoting videodiscs in Britain this year and expects Hitachi, the Japanese electronics group, to spend a similar amount. The company also plans to launch 20 new titles a month.

RCA's sudden decision earlier this month to stop marketing and producing CED videodisc players in the U.S. after massive losses has led to considerable speculation that it also marked the end of the system in the UK.

In Britain the players are sold by Hitachi, which makes them in Japan. These players are also sold by GEC under its own name. The discs themselves are sold by RCA. The CED videodisc system was launched in Britain last October by

RCA and Hitachi with a joint £2m promotion.

Mr Steve Bernard, managing director of RCA Videodiscs, said: "We will continue to support our hardware partners aggressively as planned. We already have a very significant monthly release schedule lined up for the rest of the year, and indeed one of our April releases Making of Michael Jackson's Thriller, is set to be a blockbuster on videodisc."

Pioneer of Japan and Philips, the Dutch electronics group, also sell a more sophisticated videodisc system in the UK. Videodiscs are used for showing films and special programmes on a television but unlike a video cassette recorder cannot record broadcast programmes. The videodiscs are cheaper and slightly better quality reproduction than VCRs.

Hitachi has so far only made a brief statement saying that it would continue marketing CED videodiscs

in the UK. The company is expected to make a full statement shortly because of concern expressed by dealers which hold substantial stocks of the players.

However, the fact that RCA is to continue promoting the discs strongly would indicate that Hitachi will persevere in the market for the time being. So far sales have been disappointing. Over 17,000 were delivered to dealers for the launch and only about 7,000 have been sold. The two companies had hoped to sell 25,000 by the end of the year and 100,000 in 1984.

Hitachi also has substantial stocks. In addition to those in the hands of dealers it is thought to have a further 50,000 machines in stock. The UK is also the only market where CED videodiscs are sold outside the U.S. It is not clear whether Hitachi's promotion is aimed at clearing stocks or whether the company still has a long-term commitment to the market.

Warning on pirate radio advertising

By Raymond Snoddy

THE DEPARTMENT of Trade and Industry (DTI), may write to companies which advertise on pirate radio stations warning them that they could be liable to prosecution.

The Independent Broadcasting Authority has asked for tougher measures against the pirates and the DTI is joining the Home Office in a co-ordinated campaign against them.

The IBA, which says it knows of the existence of about 50 pirate stations in the UK, has forwarded a number of advertising company names to the DTI.

It is not an offence to advertise on pirate radio but the DTI believes such companies could be guilty of aiding and abetting the pirates in a breach of the Wireless Telegraph Act of 1949.

If the DTI decides to move against the advertisers it would be the first such prosecution of advertisers on land-based pirate stations.

Yorkshire TV to seek listing

By Charles Batchelor

YORKSHIRE TELEVISION plans to seek a quotation on the Unlisted Securities Market (USM) in June which will value it at about £20m. Yorkshire is one of the last commercial TV companies without a stock market listing.

Trident Television, which has been reducing its non-television interests, would make a 15 per cent stake in Yorkshire available for sale to investors for an estimated £2m. Trident has a further 15 per cent stake which is held by N.M. Rothschild, the merchant bank, in an escrow account, for placing with local interests.

Trident initially held 100 per cent of Yorkshire and of Tyne Tees Television.

Peters Stores PLC

Unaudited Group Results for the 26 weeks ended 24th December, 1983

	26 weeks to 24/12/83	26 weeks to 25/12/82	26 weeks to 25/12/81
Net sales	£4,786	£4,905	£5,863
Profit on trading	425	549	363
Surplus on property sales	2	162	161
Interest charge	427	701	524
Profit before taxation	58	246	147
Taxation	5	24	3
Profit after taxation	53	222	144
Extraordinary item closure costs	—	61	—
Profit available for appropriation	53	161	144
Dividends	32	37	32
Profit retained	£21	£124	£112
Earnings per share	1.8p	6.5p	4.5p

Retailing profits continued to improve during the first half but sales in this early spring have been somewhat disappointing. As usual the results for the full year will depend on the final quarter. We are embarking on a major modernisation programme of all our stores to bring us to the forefront of the Jeans and Casualwear Market.

Our departmental store subsidiary, Isaac Walton Limited, has completed the first stage of its modernisation programme and is showing an encouraging rise in sales and profits.

The property subsidiaries, whilst not selling any developments in the first half, are very active with several potential schemes in the pipeline. All current developments are proceeding as planned and the Stadium Industrial Estate in Gateshead is only slightly behind schedule.

The Directors have declared an Interim Dividend of 1.0p per 10p Ordinary Share (1983-1.0p) payable on the 11th June 1984 to Shareholders on the Register as at the close of business on the 10th May 1984.

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Dated April 23, 1984

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CBI call to end pension indexation

By Eric Short

THE CONFEDERATION of British Industry has called on the Government to discontinue the full indexation of civil service and other public sector pension schemes.

It wants the Government to bring the protection of public service pensions in line with that given to private sector pensions which depends on the profitability of private sector companies.

The CBI also rejects the Government's proposals on the early leaver problem - the loss of pension rights when an employee changes jobs.

The CBI, in its evidence to the Government's special inquiry into pension provision under the chairmanship of Mr Norman Fowler, Secretary of State for Social Services, accepts that pensions should be protected against erosion by inflation. But not at a cost that threatens the prosperity of the business sector.

The CBI is opposed to the Government adding further burdens on state and occupational pension schemes, all of which have to be borne by the private sector. It points out that many employers do what they can to protect pensions in payment and the CBI is urging employers to voluntarily improve deferred pensions.

But the CBI warns the Government that forcing companies to guarantee indexation of benefits would threaten the continued existence of private sector occupational pension schemes.

The CBI also supports the concept of personal portable pensions. It wants employees to be able to opt out of the company pension scheme and set up their own personal portable pension, but only if the employer and the workforce agree. It is opposed to the proposals put forward by the advocates of portable pensions that employees should have the right by law to opt out of the company pension scheme.

In general, the CBI wants to see more portability brought in generally, but as a third tier on top of the present state and company pension schemes.

Steady trend in pay deals

By DAVID BRINDLE, LABOUR STAFF

THE emerging pattern of April pay settlements shows little change from the trend through the winter of basic rate rises of between 4 and 8 per cent, according to Incomes Data Services, the pay research organisation. Although the number of settlements below 5 per cent seems to be fewer, IDS says, there is not a steady upward drift.

The latest report of the research group concludes that the "centre of gravity" within the 4-8 per cent spread has risen.

It ascribes that partly to an in-

creasing incidence of pay deals 2 or 3 percentage points above the rate of inflation.

The report notes that the relatively large number of settlements in the retailing sector in April appears to be concentrating between 6 and 8 per cent.

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BRITISH AEROSPACE

UK NEWS

Senior Tories press for change in top party post

BY PETER RIDDELL, POLITICAL EDITOR

SENIOR CONSERVATIVE MPs have advised Mrs Margaret Thatcher, Prime Minister, that Mr John Selwyn Gummer should be removed from one of his two present posts - the chairmanship of the Conservative Party or Minister of State at the Department of Employment.

These warnings from senior members of the executive of the Conservative backbench 1922 Committee reflect grumbling among MPs about Mr Gummer's performance as party chairman. He is felt to have lacked the authority and punch of Mr Cecil Parkinson, his predecessor, who stepped down last year shortly before admitting that he had had a love affair with his secretary, who was expecting his child.

The senior Tories are believed to have argued that the change should occur within the next few months. Criticisms have been dismissed by some of the Conservative leadership as the predictable carping of certain former party office holders who were dismissed or who never combined their party posts with ministerial office.

Nevertheless, the complaints against Mr Gummer are widespread, coming from both senior and new MPs. They vary from charges of disorganisation to those

of insufficient weight. Some MPs have argued that Mr Gummer ought to be counterattacking more against Labour in weekend speeches and on the media.

Even some senior ministers concede that the combination of the two jobs has not worked out, though they argue that in part this is not Mr Gummer's fault since the problems have resulted from special circumstances when he hurriedly succeeded Mr Parkinson.

At the time, however, Lord White, the Leader of the House of Lords, privately argued that it would have been better to have opted for the traditional arrangement - whereby the party chairman holds a non-portable ministerial post, possibly outside the Cabinet, such as Paymaster-General.

This is now the view of several Cabinet ministers. But a snag is that unlike Mr Parkinson, Mr Gummer is not in a financial position to give up a ministerial salary.

The general expectation among senior Tories is that Mr Gummer will lose one of his two jobs, probably in the expected September ministerial reshuffle. Much may depend upon how he and the Tory Party perform in the three forthcoming parliamentary by-elections and the local council elections on

May 3, and in the European elections on June 14.

Mrs Thatcher apparently still thinks highly of Mr Gummer as a rising member of her Government, although she may be reluctant just yet to promote him to the Cabinet ahead of other promising middle-rank ministers.

Defenders of Mr Gummer argue that the critics are unfair since he has been very active behind the scenes at Conservative Central Office and that he has been vigorous in the row with the BBC over the Panorama programme alleging far-right infiltration of the Party.

Moreover, until recently, Mr Gummer has been tied up two days a week in the House of Commons on the Trade Union Bill, but this has now completed its committee and report stages and he should have more time for party matters.

The argument about Mr Gummer's role ties in with criticisms by senior Tory MPs of some other of Mrs Thatcher's close advisers such as Mr Michael Alison, her parliamentary private secretary. He is regarded as too self-seeking to act as an effective channel between backbenchers and the Prime Minister, though he has been seen more frequently at the Commons in recent weeks since the criticisms were first made.

Alexander settles with former directors

By Alexander Nicoll

ALEXANDER & Alexander Services, the world's second largest insurance broker, has settled with four out of five former executives who it accused of misappropriating \$55m (£38.5m) from its British subsidiary, Alexander Howden.

Mr John A. Bogardus, chairman of the U.S. company, said: "We are satisfied with the outcome of this matter. Not only have we gained certain assets, but this agreement also results in significant savings of management time and money."

Mr Ian Fosgate, a former noted Howden underwriter, is not a party to the accord, and Alexander & Alexander is continuing litigation against him.

After the purchase by Alexander & Alexander of Howden in 1982 for about \$300m, it alleged that the five executives had misappropriated up to \$55m by diverting money into companies they secretly controlled.

The U.S. company took an extraordinary \$40m charge against earnings in 1982, although it recovered \$26m of the lost funds.

The four former officers and directors who have settled are Mr Kenneth Grob, former Howden chairman, Mr Ronald Comery, Mr Alan Page and Mr Jack Carpenter.

William Press losses inquiry out this week

BY RAY MAUGHAN

THE RESULTS of a worldwide investigation into the affairs of William Press will be unveiled on Wednesday by Amec, the international civil engineering group formed 18 months ago through the merger of Press and Fairclough Construction.

Amec will also reveal the terms of a severance compensation deal agreed with former William Press executives who served briefly on the new group's main board before resigning last year.

The investigation was conducted by Price Waterhouse which has been appointed to replace Arthur Andersen as joint auditor to Amec with Armitage & Norton. The inquiry began after the discovery in January last year that Press's Haverton Hill Fabrications subsidiary had made operating losses of £7.7m in 1982 and would require a further £4.3m to cover closure and rationalisation costs.

Haverton's contract losses, independently reviewed at the time by Price Waterhouse, meant that Press's profits fell in 1982 from £7.5m to £752,000 before tax which, after all charges, led to a £7.5m loss.

Sir Oswald Davies, the chairman of Amec and formerly head of Fairclough, said last June that he was "extremely disappointed with this result," even though the Fairclough side of the merger was growing strongly with a 32 per cent increase in pre-tax profits to £17.8m in 1982. Price Waterhouse's investigative brief was consequently widened to

include the whole of Press's international engineering contracting activities. Amec will announce the results of this inquiry, which continued throughout last year, with its results for 1983 to be published this week.

The scope of the examination, Amec believes, is comprehensive although the scale of any further contract provisions is not thought to match the provisions required at Haverton. An immediate consequence of the Haverton investigation was to change the concept of the Amec merger. What had originally been described as a "partnership" of complementary businesses became effectively the acquisition of Press by Fairclough.

A "new executive board" was constituted in January to manage, control and monitor the group. As Sir Oswald told shareholders last year: "This board will report to me and thence to the Amec board."

The three Press representatives on the top Amec board have since left and Amec has now negotiated what it hopes is a compromise compensation agreement which will be acceptable to its shareholders.

When the merger document was drawn up, it disclosed that Mr William Hawken, the deputy chairman of Amec, had signed a service contract on May 14 1981 which was terminable by Press on or after May 14 1986. His annual salary in 1982 was £28,000.

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Shareholders' Meeting

NOTICE IS GIVEN that the Annual General Meeting of Shareholders of the Company will be held at the Promenade Hotel, 1 van Stolkweg, The Hague, The Netherlands at 11.00 a.m. on Wednesday, 2nd May, 1984.

AGENDA

1. Opening
 2. Report of the Board of Management
 3. Annual Accounts for 1983
 4. Approval of the proposed dividend per share of Dfl. 9 in cash
 5. Appointment of Members of the Supervisory Board
- In accordance with Article VI.2, Section 2 of the Articles of Association the following directors are to retire by rotation:
- J.F. Visser
 - J.M.G. Hoes
- Messrs. Visser and Hoes are available for re-election. The meeting of proxy shareholders proposes the appointment of:
- J.F. Visser - J.A.E. Koning
 - J.M.G. Hoes - Mrs. H.J.M. van Borsel
6. Questions before closure of the meeting
 7. Closure of the meeting.

Shareholders' Rights

Shareholders and usufructuaries with voting rights who wish to attend the meeting have to deposit their shares or deposit receipts from an institution as defined in Article VIII.6, Section 2 of the Articles of Association on or before 28th April, 1984 at the office of the Company, 23 Nassaulaan, The Hague, or at the offices of Pierson, Hekking & Pierson N.V., Algemene Bank Nederland N.V., Coöperatieve Centrale Raiffeisen-Boerenleenbank B.A., Bank Mees & Hope N.V., Credit Lyonnais Bank Nederland N.V., Kempen & Co N.V. in Amsterdam, Rotterdam, The Hague and Utrecht, in so far as there are established, or at the offices of Morgan Grenfell & Co. Limited, New Issue Department, 21 Austin Friars, London EC2N 2HB, where arrangements may also be made for voting by proxy.

Annual Report 1983

Copies of the Annual Report (in English) may be obtained in the United Kingdom from Morgan Grenfell & Co. Limited, New Issue Department, 21 Austin Friars, London EC2N 2HB or from Hoare Govett Limited, Heron House, 318-325 High Holborn, London WC1 7PB on or after 13th April, 1984.

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UK NEWS

European public sectors urged to speed job creation

BY TIM DICKSON

BRITAIN MAY have the highest number of unemployed of any country in Europe - but it can also boast a leading role in local initiatives to create new jobs.

Based on the evidence of several recently researched case studies, a new report from the Economist Intelligence Unit urges more local and regional authorities throughout Europe to encourage the expansion of existing and the creation of new businesses.

"Unless the public sector recognises that the claims of local action are such that public funds should be provided as the mainstay of support, then local action will peter out in a few years," the report says.

This would require "a willingness in most countries of Europe to acknowledge that such funds are more effectively spent in that way than in expensively persuading invisible investors that there is only one place in Europe worth investing in - the town or city doing the promotion."

The report considers the history of projects in the UK, the Netherlands and France, including UK enterprise agencies, British Steel Corporation (industry), the job creation arm of the steel corporation, and

the joint project between the Dutch electricals giant Philips and the private British company Job Creation to alleviate the effects of a major closure in The Hague.

The Philips project "shows that a prime sponsor, private in this case but public sector in others, ... can make a real contribution to the community with which it is concerned."

A bold commitment moreover, induces others to join the scheme for as the report points out, an initially sceptical municipality of The Hague had now asked Job Creation to develop a second enterprise centre for small companies.

The study suggests that communities, local authorities and local employers may be surprised by the energy, talent and initiative lurking in even the most depressed areas.

But it was crucial that objectives were clearly defined. For example, new companies should not be helped to put others out of business by producing a product or service for which there was already adequate local supply.

EU Special Report No. 165, *Creating New Jobs in Europe: the role of local initiatives*. Spencer House, 21 St James's Place, London SW1. Price £34.

Ian Rodger analyses the prospects for the manufacturing sector

Managers hardened by recession

THERE ARE NOT many backers these days for what are euphemistically referred to as smokestack or sunset industries, especially in a Conservative government enthralled with microchips and fast food franchises.

But Mr John Butcher, the junior Industry Minister, has suddenly become aggressively enthusiastic about the importance and prospects of heavy manufacturing industries in Britain's future.

"I believe manufacturing will always be the basis of wealth creation in this country," Mr Butcher said in an interview last week.

Is this a genuine statement of belief, or is he just making a virtue out of necessity, given his special ministerial responsibilities for the shattered West Midlands?

The former computer industry executive chuckles, but insists that he really believes it. "Manufacturing matters, and engineering matters."

Manufacturing industry, especially engineering, is about to become fashionable again, he claims. Businessmen will soon invest in manufacturing with at least as much enthusiasm as they now invest in service industries, because that's where the big profits will be made.

Employment in manufacturing in Britain, which has dropped dramatically in recent years, could even start rising again at some point.

Mr Butcher believes that a conjunction of factors, mainly new manufacturing technologies and the emergence of a new generation of industrial managers, is making the restoration of Britain's industrial base possible.

The traditional sectors have been dominated by people who had five more years to go, and people in that position don't tend to think about long term investments.

The recession has seen off a lot of them. Their companies have been either bought out or put in receivership, but one way or another, their order books have been passed on to a new kind of manager-director.

"Typically, he is 35 to 45, he is professionally trained, he is bright, he's tough and he's very angry and hungry. He has survived the recession and he is determined to do some damage in the home and international markets."

These managers are arriving, he says, at a time of great upheaval in manufacturing technologies, with new methods of design, new materials and new factory techniques becoming available every day. Many hold out the prospect of significant improvements in productivity and profitability.

He acknowledges that many British manufacturers are well behind their overseas competitors in the application of new manufacturing technologies, but argues that change is occurring at such a rapid

rate that the opportunities for them to get back in occur very frequently.

Catching up implies the use of a lot of engineering expertise, and Mr Butcher speaks of a "huge national intellectual effort" already under way in some sectors.

And that, in turn, is helping to improve the status of engineers. They're in short supply now, and if the labour market works in the normal way, then graduates in the new engineering disciplines are in for a substantial pay rise.

This series of trends favouring a renewal of manufacturing is fortunate, Mr Butcher argues, because Britain has little choice but to redevelop its manufacturing industries if it is to maintain its living standards when the oil surplus disappears.

The service industries make a much larger contribution to the economy and to employment than manufacturing ever will.

"But only 38 per cent of services are internationally tradeable including insurance and banking, whereas 80 per cent of manufactured goods are internationally tradeable."

He points out that the proportion of Britain's GDP coming from manufacturing - 23.4% - is lower than that in West Germany (34.8 per cent), Japan (30.8 per cent) or France (27.6 per cent).

"I believe the time is coming again when the best returns will be made in the manufacturing sector, and that makes me an optimist on the jobs front. I think those who say structural change is here forever are fundamentally misguided. They're simply taking the more malign trends of the last three years and projecting them forward forever in the same way as their equally misguided counterparts in 1932 projected the trends of the period from 1930 to 1934."

Given his optimism, Mr Butcher does not see the need for massive government intervention or discipline in the manufacturing industries.

"If we were suffering from hardening of the arteries, then it is not a blood transfusion that is needed, but some vitamin E to improve the flow."

That is the rationale behind most of the Government's programmes for industry. Some aim to show managers how to use new technologies, such as computer aided design, others help them buy robots and computer controlled machine tools.

Mr Butcher believes this is the right approach. The "closest" he would come to discipline would be to focus some programmes more sharply to indicate what industries the Government wants to see develop.

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DAVID INNES WILLIAMS – CHAIRMAN OF COUNCIL REPORTS SIGNIFICANT ADVANCES.

The year 1982/83 has been an active and successful one for ICRF, a year both of achievement and promise. We have been able to present significant advances in our understanding of cancer, as well as in the prospect of cure, and we have had the opportunity, through the generosity of our benefactors, to initiate some very important new projects, which we can confidently predict will bear fruit in years to come.

NEW LABORATORIES.

Our major building project, the new laboratory at Clare Hall, South Mimms, is proceeding apace: the first phase will be ready for commissioning in September 1984 and plans for the scientific work to be undertaken there are well advanced, complementing the research carried on in Lincoln's Inn Fields.

Last year I was able to announce our intention to open a new unit in the Dominion House Laboratories at St Bartholomew's Hospital to study viral and cellular oncogenes. This is now fully operational and holds great promise.

CLINICAL RESEARCH.

The Breast Unit at Guy's Hospital has always been amongst our most successful ventures. Initially concerned essentially with surgery and radiotherapy, the unit has also included medical oncologists whose interests have widened to include cancer in other sites as well as leukaemia. We have now decided therefore that the time has come to put the whole of cancer research in Guy's on to a sound footing, as part of the Medical School, as well as in the Hospital.

Accordingly, we are devoting a large sum of money to the endowment of a Professorial Chair of Oncology, which will be concerned with research into the medical and radiotherapeutic control of cancer as well as incorporating the surgical work already undertaken in the Breast Unit.

Colo-rectal cancer is almost as common as breast cancer, and we have always felt the need to extend our research endeavour into this area.

St Mark's Hospital for Rectal Disease has long

been recognised internationally as a centre of surgical advance, and we are now able to set up an ICRF research unit there, based on the already well established Departments of Surgery and Pathology.

Of particular interest to our investigators is the hereditary element found in some cancers of the bowel. The unit will inevitably be small compared with the Breast Unit for some time to come, but we will hope to see it develop.

Our close proximity to the Royal College of Surgeons has not always been exploited to the full. Now, however, we are embarking on a joint venture in the field of histopathology, once the starting-point of most cancer studies but now sometimes pushed into the background by other expanding disciplines.

We are setting up a shared facility which will offer a reference service for rare and obscure tumours as well as providing a spring board for the research applications of new methods of investigation.

SIR THOMAS COPE BROWNE – TREASURER COMMENTS.

The restoration of our finances to a more acceptable balance between Income and Expenditure which occurred last year, has enabled us to review and plan the implementation of a number of new projects, and some of those which had been temporarily deferred.

The Council of The Fund have now approved plans for expansion which will require capital expenditure in the order of £6.25 million over the next three years and which will ultimately add £1 million to our annual expenditure.

These include the construction of an additional laboratory block at South Mimms at a cost of £2.5 million, the endowment of a Professorial Oncology Unit at Guy's Hospital School for £2 million, the establishment of Units within St Marks Hospital and The Royal College of Surgeons £435,000, and further development of our site in Lincoln's Inn Fields which will amount to £1 million.

That we have had a successful year is made clear not only by a 17% rise in our total income from £18.8 to £22 million but by the very positive response that we have received from the public to our new advertising campaign.

The decision to invest substantial resources in developments and projects which could require a lifetime of financial support is a fine judgement given the inevitable uncertainty of our source of funds. We spent £15.6 million in the year under review

and our recurrent expenditure will rise dramatically over the next two years.

It is only through careful planning that we can now undertake capital expenditure of £6.25 million.

CHARITY ACCOUNTS.

There has been much debate both within the media and the accountancy profession concerning standards of charity reporting. The Accounting Standards Committee of the Institute of Chartered Accountants in England and Wales is due to publish its recommendations shortly. It has always been our policy to present our Annual Report and Accounts in as clear and concise a manner as possible whilst trying to ensure that the donor is presented with sufficient information to evaluate the worth of his support.

In conclusion, we can justly claim that our Appeals expenditure, which this year is 51p of every £ received, is as low as any in the charitable field.

This is, in no small measure, due to the unceasing efforts of so many unpaid supporters and helpers in the country to whom I offer my sincerest thanks.

DR. W.F. BODMER – DIRECTOR OF RESEARCH.

In his statement to the Governors, Dr. W.F. Bodmer, FRS, Director of Research sets out the extensive nature of studies undertaken in the main laboratories.

He explains that the work of a cancer research institute must range from quite fundamental studies on the way that genes work, using the most appropriate model system whether it be a bacterium or a human cell, to applied studies such as on the relationship between diet and cancer, or on the best combination of drugs to use for chemotherapy.

Dr. Bodmer believes that ICRF must always seek to maintain a balance of work in different areas, feeding the applied end with fundamental advances, while maintaining momentum at the forefront of applications. For example, a major aim for improving the treatment of cancer is to find ways of attacking the cancer cell more specifically, without damaging normal tissue to anything like the same extent.

One way to do this is to attach a poison to a monoclonal antibody that reacts specifically with cancer tissue and hardly at all with normal tissue, and these systems are being made to work in the laboratory. The challenge now is to make this approach useful in the clinic.

One of the striking features of present day cancer research is the way that modern understanding and ability to manipulate cells, their genes and their products has made the relationship between fundamental and applied research closer than ever before. It is also essential that cancer research takes advantage of modern technology; a genetic engineering laboratory for example is incomplete without direct access to computing facilities.

Concluding with a tribute to the public whose generosity sustains us, he confidently reports progress in all these areas with a conviction that ICRF is in a position to seek new opportunities and challenges to further our research into the causes, prevention and cure of cancer.

UK NEWS

David Hellier looks at the Zola Budd case

Athlete takes the fast lane to British citizenship

THE DECISION to grant British citizenship to Miss Zola Budd, the 17-year-old South African athlete, within 10 days of her applying for it, highlights the arbitrary way in which wide discretionary powers under the 1981 British Nationality Act can be used.

More than 82,000 people acquired citizenship of the UK and Colonies in 1982, the latest figure available. Most of those applications would have been processed in one to three years.

In a House of Commons reply last November, Mr David Waddington, Home Office Minister, said that when there was an entitlement to citizenship, the average time taken to process applications was 18 months. For those which were discretionary, the time taken was rather longer, on average, 21 months.

In the House of Commons last week Mrs Margaret Thatcher, Prime Minister, replied to Labour opposition complaints that the Government had unfairly given preferential treatment to Miss Budd. She said the applications had been processed with speed so that Miss Budd could be considered for the British athletics team for the Los Angeles Olympics.

Miss Budd's application was granted under Section 3 (1) of the Nationality Act, which allows the Home Secretary discretion to give

Zola Budd won her first race in Britain at the weekend, setting a UK junior 3,000-metre record of 9 minutes 02.6 seconds at an event in Kent.

nationality to minors, irrespective of where they were born or the nationality of their parents or grandparents.

Normally, the procedure for a minor applying for citizenship would be a long one, although somewhat shorter than that for adults. Several things would need to be taken into account, including evidence of good character, residence applications and a knowledge of English. Another important factor would be whether the applicant intended to live permanently in Britain.

Police would normally take about three months to decide on character, for example.

Mr David Stephen, the director of the UK Immigration Advisory Service, said that under any other sections of the Act, apart from 3 (1), Miss Budd normally would have had her application refused.

For example, under section 3 (3) of the Act, an application could be refused if the number of days on which the person in question was absent from the UK exceeded 270 during an arbitrary period of three

years ending with a date not later than the child's date of birth.

In Miss Budd's case, although her father is British by descent, he has not lived in Britain and would therefore not satisfy section 3 (3).

The 1981 Act also stripped minors born in the UK of their automatic right to citizenship, although here too a certain amount of discretion can be invoked.

Someone who does not qualify for automatic entitlement may still be entitled to citizenship so long as during each of the first 10 years of that person's life, the number of days on which they were absent from the UK did not exceed 90.

Under section 1 (7), however, the Home Secretary may consider applicants irrespective of whether they have fulfilled the above requirements, if he thinks fit.

Apart from the fact that Miss Budd's application had to be processed quickly if she were to stand a chance of running for Britain in the Olympics, it also had to be done before her 18th birthday, which is next month.

Miss Fiona MacTaggart, general secretary of the Joint Council for the Welfare of Immigrants, said she was annoyed because the Home Office had shown favour to an athlete above thousands of people whom she felt had more deserving cases.

Brokers see gains for economy

BY PHILIP STEPHENS

THE PROSPECT that further strong productivity gains might continue to put downward pressure on inflation lay behind the Government's decision to stimulate the economy in last month's budget, stockbroker Phillips & Drew said today.

In its latest review of the outlook for the economy the broker said

that all the signs pointed to the rapid pace of productivity growth being maintained. Productivity in manufacturing had risen by an average 6 per cent a year since the beginning of 1983.

The perception that much of this represented a structural change in the economy rather than simply a cyclical upturn had allowed the

Government to take a more relaxed view of inflation prospects.

While average earnings growth was still fairly buoyant, better productivity would continue to limit the cost pressures on business.

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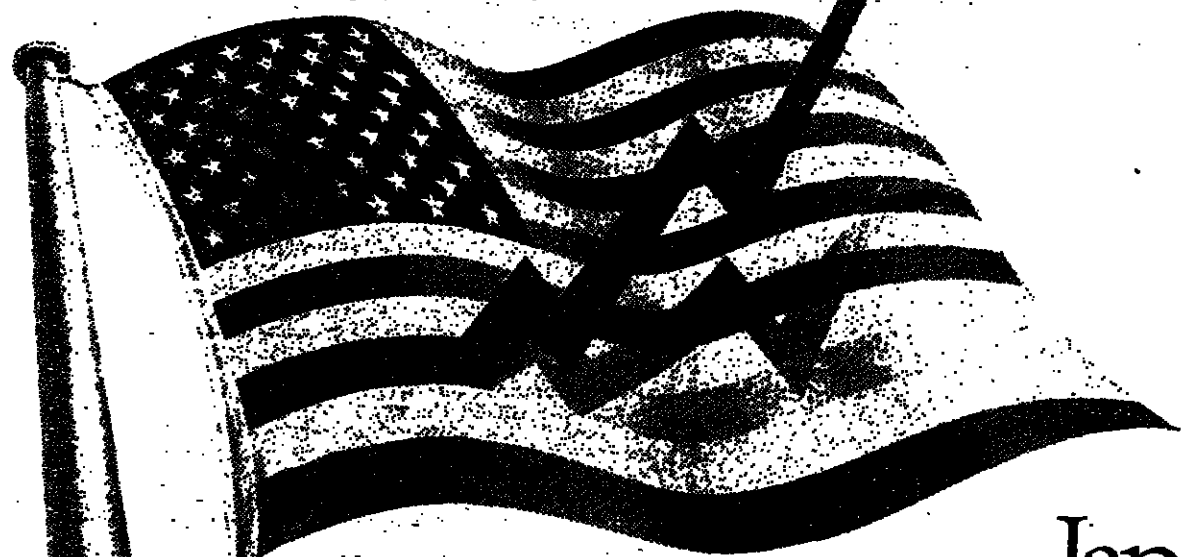
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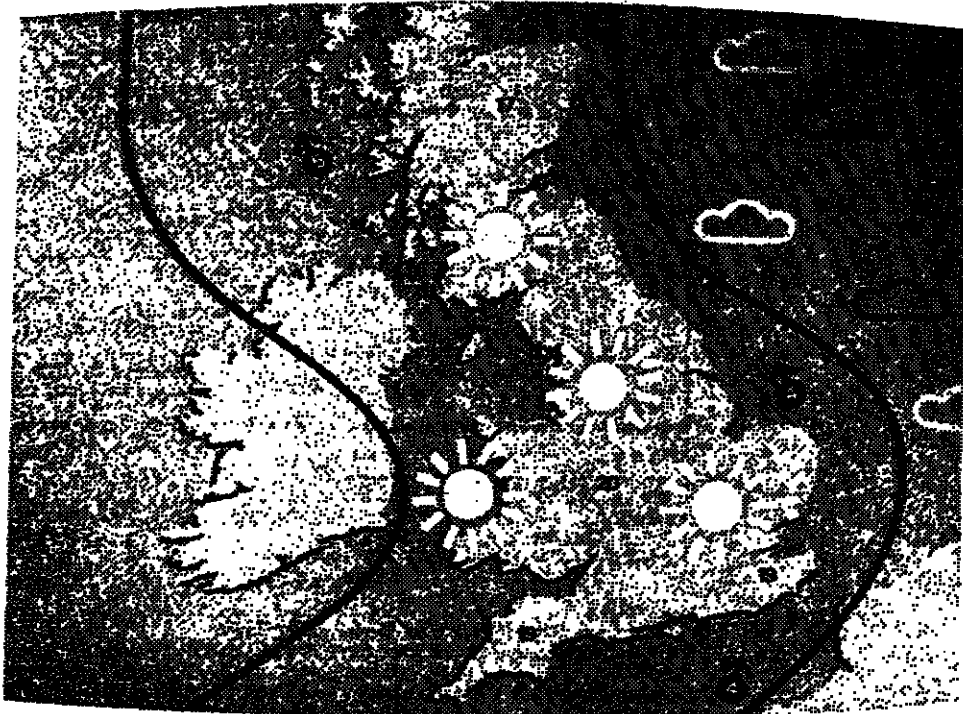
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INSURANCE

Lords reverse extradition treaty practice

FOR AS LONG as any practising lawyer can recall it has been the practice of governments with which Britain has treaties of extradition, when requesting this country to surrender a fugitive criminal to stand his trial abroad, to call expert evidence on the applicable foreign penal law.

The Bow Street magistrate, who initially has to determine whether the fugitive criminal should be surrendered, has had to have an expert in the relevant foreign law sitting at his elbow to guide him through the thickets of an alien legal system. Such expert evidence has been necessary to prove that what the fugitive criminal is accused of having done in the foreign country is not only criminal according to its own law but also a crime that is substantially similar to one or more of the extraditable crimes listed in the Extradition Act 1870, as amended from time to time by subsequent treaties.

Exception

In future, following a House of Lords decision last week, it will only be necessary for the Bow Street magistrate to have regard for foreign law if the treaty of extradition or any supplementary treaty adds to the list of extraditable crimes in qualified terms.

Treaties often specify that extradition may be granted for any other crime recognised by

the laws of both the requesting country and the returning country. Double criminality, as it is called, is then specifically applicable.

This exception apart, in the ordinary case of a fugitive criminal accused of an extraditable crime the magistrate in London is unconcerned with what provision of foreign criminal law is stated in the warrant to be the offence of which the person is suspected and for which his arrest has been ordered in the foreign state. The magistrate's sole function is to hear the evidence which is adduced in respect of the English extraditable crime and deal with it as if he were hearing a case for committal for trial in the crown courts of England.

That is the essence of the Lords decision last week in *Re Nielsen*, which dramatically reverses an unbroken line of extradition cases heard by Bow Street magistrates for more than a hundred years.

Mr Bonde Nielsen has been charged by the Danish authorities with fraudulently abusing his position as controlling shareholder of a Danish company to rescue another company under his control from severe financial difficulties. The means alleged to have been employed by Mr Nielsen were to cause the first company to purchase certain shares from the second at an inflated price and on onerous terms, the purchase price being nearly 100m Danish kroner (£7.25m).

Mr Nielsen then advanced loans to the financially-

struggling company, without security, totalling about Dkr 13m. These loans, it is alleged, have not been repaid and the first company has lost the whole of the capital invested in the purchase of the shares.

Mr Nielsen was arrested on a warrant and accused of the crime in Denmark of "fraud by a director of a company." This was translated into English criminal law terminology as "obtaining property by deception." The Chief Metropolitan Magistrate heard evidence on Danish law and concluded that the Danish offence involved a narrower concept than was involved in any comparable English offence, and that since the offences under the two laws were not substantially similar he felt compelled to discharge Mr Nielsen as matters stood.

Subsequently the High Court reversed the Magistrate's decision, and that has now been upheld by the House of Lords. The case goes back to Bow Street for the magistrates to continue hearing the unfinished evidence which the Danish Government wishes to produce.

Acquittal

How does this reversal of a long-standing and invariable practice affect the process of extradition? Suppose some individuals entered a public office in the capital city of Ruritania by producing a valid passport, but then proceeded to steal some confidential documents. Ruritanian law has a crime of burglary but entry to the place burgled does not have

to be by way of trespass. Under English law entry as a trespasser is an essential ingredient of the crime of burglary.

Even if the laws of Ruritania and England on the crime of burglary were sufficiently similar so as to comply with the law of burglary in Ruritania would be irrelevant; the English magistrate would be wholly unconcerned with the fact that the suspected burglars might be returned to Ruritania and be convicted of the crime without the Ruritanian prosecution having to establish that they were trespassers. If they were to be tried in England, the failure to establish that they had entered premises as trespassers would mean an acquittal.

Take a more extreme example of a charge of murder in Ruritania. If applications were made for the criminal's return from England, the Ruritanian authorities could get their man so long as they could persuade the English authorities that any other extraditable offence—such as theft—had *prima facie* been committed. The fact that there was insufficient evidence to convict for murder under Ruritanian or English law would not prevent the fugitive criminal from being returned to face his trial for murder, so long as the request was for him to stand trial for murder.

The general principle of international law is that in all cases of extradition the deed done, on account of which extradition is demanded must be considered a crime by the laws of both requesting and

returning state. Absolute identity of the two laws is not required. The essential character of the deed must be the same and made criminal by both laws. Nielsen's case has swept away that general proposition which will apply in the future only where the relevant extradition treaty specifically qualifies the exclusive regard by English law. English municipal law rejects the international law doctrine.

Revision

No one nowadays believes that the courts do not make, but only declare the law. But if judges are bound to develop and even change the law they are usually careful not to turn themselves into legislators. Where everyone had proceeded for decades on the assumption that the law was X (even if it was erroneous) it is surely a matter for parliament to consider and if necessary to effect any change.

Extradition law, which has not been altered materially since the 1870 Act, is in need of urgent revision. Two years ago a Home Office working party produced a detailed report, pointing up some of the defects. There is also a European Convention, to which this country is not a party. The public concern aroused by the House of Lords' decision in the Nielsen case should at least stimulate debate if not actually provoke parliament to act.

Times Law Report, April 13 1984.

Justinian

Rise in underwriting losses last year offset by more investment

BY ERIC SHORT

THE MAJOR quoted British insurance groups have now all reported their general insurance results for last year. The picture early in 1983 that it was going to be an even worse year than 1982 have been borne out, even though there were relatively few natural catastrophes.

However, the deteriorating worldwide underwriting losses were more than covered by an improvement in investment income, in sterling terms, and higher life profits. The overall result was that net profits for 10 major companies showed a 15 per cent increase, with shareholders getting a 14 per cent rise on average in their 1983 dividend payments.

The table shows the aggregate results for last year of these 10 groups—Commercial Union, Eagle Star (now part of BAT Industries), General Accident, Guardian Royal Exchange, Legal and General, Pearl, Phoenix, Prudential Corporation, Royal Insurance and Sun Alliance.

Overall underwriting losses rose 9 per cent from £950m to £1,040m, the main contributors to these losses coming from Britain and the U.S. The U.S. has been a poor insurance market for the past few years and conditions have been getting steadily worse. Overall underwriting losses have risen from £382m to £491m, with the Commercial Union contributing £245m.

Trading conditions remained

AGGREGATE RESULTS FOR THE 10 MAJOR UK INSURANCE GROUPS

	1983 £m	1982 £m	Change %
Underwriting			
UK	-274.6	-314.7	
U.S.	-498.9	-342.4	
Canada	-35.3	-45.5	
Australia	-18.3	-29.3	
Europe	-70.9	-64.4	
Rest of the world	-145.8	-127.1	
Total	-1,040.8	-950.4	+9.8
Investment income	1,415.3	1,274.2	+10.9
Life profits	253.2	215.2	+17.7
Net profits	442.4	383.3	+15.4
Average dividend increase			+14.6

The aggregate results of Commercial Union, Eagle Star, GA, GRE, L and G, Pearl, Phoenix, Pru, Royal and Sun Alliance.

Source: Wood Mackenzie

difficult throughout the year in the U.S. with keen competition leading to inadequate rates and rising underwriting losses. Hurricane Alicia caused considerable losses for some of the insurance groups operating in the U.S. and the severe December weather resulted in even heavier losses for all.

British insurance companies in the U.S. have been looking carefully at their operations. They have increased premium rates, even if this meant losing market share.

The British result was disappointing for the insurance companies considering that the winter of 1982 was one of the severest in memory.

The reduction in underwriting losses from £314.7m to £274.6m only underlines the basic weakness in the British insurance markets.

The better weather last year meant domestic household buildings accounts showed sharp reductions in underwriting losses, but the dry summer caused an outbreak of subsidence claims towards the end of the year.

However, this improvement was offset to a large extent by the continuing rise in theft claims. Insurance companies paid out more than £200m of theft claims from homes and of personal belongings—a quarter more than in 1982.

Insurance companies operating in Britain have been com-

peting keenly for private motor business for the past three years. The effects of this competition emerged last year as underwriting losses climbed steadily. The situation was exacerbated by a rise in the frequency of claims.

Fire damage, excluding the insured £165m fire at the Royal Ordnance depot at Donnington in Shropshire, was little different from that of 1982. But commercial property accounts in Britain are suffering from competition and inadequate rates, so the stability of fire losses was welcome.

However, there were signs that companies were not prepared to cut premium rates further to keep business.

Canada showed a useful recovery in reducing losses. But the recovery stopped in the fourth quarter as insurance companies in that country took advantage of improved conditions to start cutting premium rates again to increase market share.

Australia showed a steady recovery in spite of big bush fires in Victoria and South Australia early in the year. Insurance companies are hopeful that the recovery in Australia is more permanent than in Canada.

European results were mixed. Some countries showed improvements, but conditions in others worsened.

BUSINESSMAN'S DIARY

UK TRADE FAIRS AND EXHIBITIONS

April 16-18 Solid Handling Exhibition— SOLDEX (Oxford) (0895) S04311	May 14-15 British Craft Trade Fair (0283) 656121
May 1-3 All Electronics ECIF Show (0799 26689) Barbican	May 15-17 Micrographics '84 Exhibition and Conference (Godalming) (04868) 6653
May 1-3 Fibre Optics Exhibition and Conference (0799 26689) Whitbread Forum Ten Rooms	May 15-17 DEC User Show (01-837 3889) Cassand International Hotel, W6
May 1-3 International Air Cargo Exhi- bition and Conference (St Albans) (0727) 88633	May 20-22 Business to Business Exhibition (01-729 0677) Barbican
May 2-Oct 21 International Garden Festival (051-236 8090) Liverpool	May 21-25 International Fire Safety Confer- ence and Exhibition (01-246 4477) NEC, Birmingham
May 9-11 Southern Aids for the Disabled Exhibition and Conference (Tun- bridge Wells) (0892) 44027	May 22-24 Ribe computer exhibition and conference (01-837 8891) Blossbury Crest Hotel
	May 23-25 Chelsea Flower Show (01-834 4393) Royal Hospital, SW3

OVERSEAS TRADE FAIRS

Current Milan International Trade Fair (01-837 3153) (until April 23) Milan	May 10-13 Asian Automotive and Acces- sories Exhibition (Guildford) (0453) 38095
April 16-19 European Trade Fair for Tech- nology and Organisation in Banking (Luxembourg 2 09 31) Milan	May 10-16 International Packaging Exhi- bition and Conference (Con- fectionery Machinery—INTER- PACK (01-493 3883) Dusseldorf 1951)
April 24-27 Food and Hotel Asia (01-486 1951) Singapore	May 20-27 International Aerospace Exhi- bition (01-551 2191) Hanover
April 20-May 4 Direct Marketing Symposium and Exhibition (01-69 48 55) Montreal	May 22-25 Asian International Electronic Communications Exhibition and Conference—COMMUNICASIA (01-493 1951) Singapore
May 5-9 Systems Components and Materials for Industrialised Building Sector Exhibition (01- 486 1951) Milan	

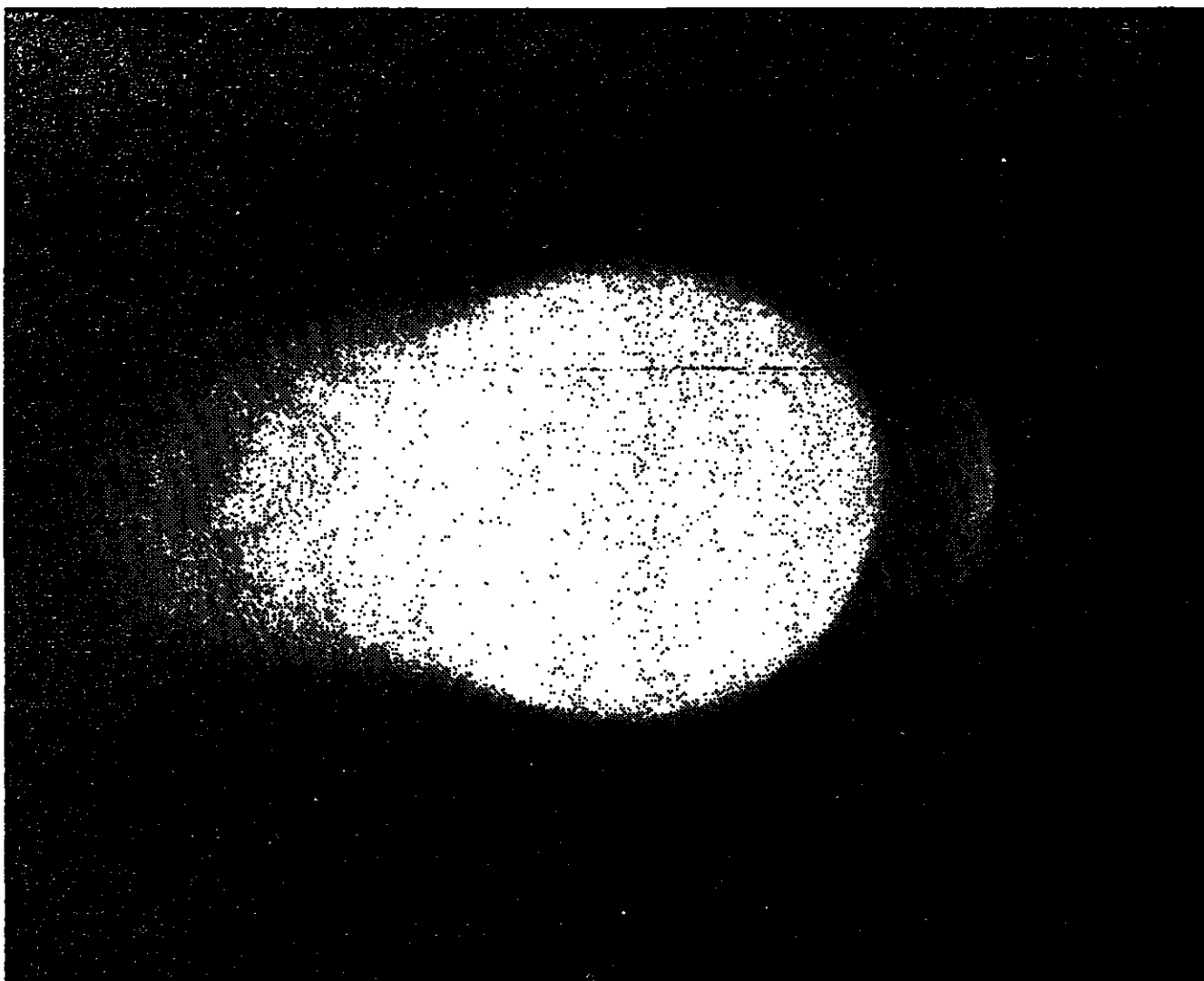
BUSINESS

CONFERENCES

April 18 Longman Seminars: Finance v Dawson—the Implications (01- 263 2548) Barbican	May 14-14 Mead: Law and business in the UAE (01-44 5513) Abu Dhabi
April 23-27 Insig: Banks and computers (1) 793.0740 Paris	May 15 Business Briefings: Acting for Lloyd's underwriters, taxation planning and advice (01-381 1264) Waldorf Hotel, WC2
April 26-28 Progress Foundation / IMF: Money—a search for common ground (081) 65 02 69	May 16 Institute of Marketing: Market- ing for profit (Bourne) End (06289) 24922
May 3 Institute of Directors: New legislative threats to directors (01-388 1811) Cafe Royal, W1	May 16 Institution of Taxation: Finance Bill 1984 (01-235 8947)
May 3-4 FT/20 Bankers: World gold market (01-621 1255)	May 16 Longman Seminars/International Media Law: The media and the conference (01-242 2548) Barbican
May 4 Longman Seminars: The elec- tronic banking revolution (01-242 2548) Barbican	May 22 ESG: USM: Trading or private planning? (Uppingham) (0872) 82711) Piccadilly Hotel, W1
May 10 IWP: Electronic mail in practice (01-242 9807)	May 22 Royal Institute of Navigation: Global civil satellite navigation systems (01-388 5021)
May 11 Lancashire Conference Centre	May 22-24 FT Conference: Ship World FT Act (01-242 2548) Barbican
May 11 Longman Seminars: The Lloyd's motor conference (01-421 3155)	May 22-24 FT Conference: Ship World FT Act (01-242 2548) Barbican

Anyone wishing to attend any of the above events is advised to telephone the organisers to ensure that there has been no change in the details published.

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EDITED BY ALAN CANE

15

DINOL IN SWEDEN AIMS TO PREVENT CORROSION BY AUTOMATION

Rustproof care by robots

BY JOHN GRIFFITHS

TECHNICIANS from a number of the world's motor manufacturers currently are beating a path to the town of Hasselholm, set deep in the countryside of southern Sweden.

It houses the production plant of Dinol International, the anti-corrosion subsidiary of Axol Johnson, which, with an annual turnover of £3m, is Sweden's third largest industrial group after Volvo and Electrolux.

Within an unpretentious brick building, Dinol has set up what the company hopes will become a standard ingredient of vehicle assembly lines.

It is a fully robotic system for rustproofing vehicles, covering underbody, interior box sections, doors, and all other areas perceived to be vulnerable.

The system, developed by Dinol, but using robotics from Trafica, can handle an assembly line rate of up to 40 vehicles per hour, says technical director Mr John Paulsson.

In line with the flexible manufacturing systems now becoming standardised in the motor industry, it is programmable to handle a variety of models coming down the same line.

The purpose behind Dinol's development of the system is two-fold:

The bulk of its turnover (SKr 250m—about £23m—last year) comes from the supply of anti-corrosion chemicals to the motor and other industries—it is already involved in assembly line operations with manufacturers such as Audi, MAN and Volvo and to its 2,000 franchised aftermarket treatment centres spread around the world. Their wider use in full on-line robotic systems obviously stands to increase this turnover substantially: Dinol is forecasting SKr 750m within the next five years.

It would also distance the company yet further from the badly tarnished image which the vehicle rustproofing industry—at least in the after-market—has acquired, with considerable justification.

Throughout, the problem of "aftermarket" rustproofing—usually carried out by franchised outlets shortly after a car has been purchased—has been that there is no really effective way of knowing whether the process has been carried out properly.

Dinol itself will concede that while it runs a tight monitoring

operation, with unannounced spot checks on its own Tuff-Kote Dinol franchisees, they can never be wholly effective against potential abuse.

Apart from potential malpractice, or sheer inefficiency of hand operators, the vulnerability of a car to corrosion increases sharply within weeks of leaving the production line, points out its managing director, Mr Lars Wisen.

As a half-way house between after-market and on-line operations, Dinol for some time has also been carrying out rustproofing operations for importers of vehicles prior to their retail sale. Honda, Suzuki, Citroën and Alfa Romeo come into this category in the UK, for example.

Nevertheless, says Mr Wisen, the most effective anti-corrosion protection must come from applying it during the actual assembly process, by a robotic system which allows no room for operator error, and he backed by a manufacturer-supported retreatment programme at intervals.

Even then, he dismisses any prospect of such measures prolonging a vehicle's life indefinitely.

"At best, anti-corrosion measures can only delay the onset of rusting. To talk of corrosion-proofing is nonsense. One way or another, by force of nature, the steel in a car will revert to its natural state of ferrous oxide."

The effectiveness of the Dinol-developed system is attributed partly to the robotics, partly to the materials used. One of the biggest problems which has militated against on-line treatment, for example, is the unacceptable health hazards of open spraying several litres of solvent-based rustproofing chemical on to the complete, assembled vehicle underbody. Thus Dinol has developed a material which is sprayed on while hot. The supply tank, hoses and robot spray head are all heated to a temperature slightly above the material's setting point. Within seconds of application it cools to its setting point, without drips and with no evaporation of hazardous solvents into the working environment.

Other compounds of differing characteristics are used for injection into box sections and other areas.

Mr Wisen points to four particular factors which, he thinks, are concentrating manufacturers' attention increasingly on corrosion retardation: the switch, now some years ago, to water-based paint systems for vehicles; the increasingly corrosive nature of the atmosphere—"acid rain" is a problem beginning to deeply worry much of Europe and Scandinavia—intensified use of road de-icing compounds and the major recent changes in car design.

In the last case, vehicle strength has become concentrated on the way in which the sheet steel is stamped and folded, which has allowed thinner steels to be used in pursuit of weight-saving. Implicit in this is that the integrity of the thinner structure is liable to be damaged much more quickly compared with earlier structures.

This has made the treatment of box section interiors even more crucial and manufacturers have adopted a number of processes such as pre-treatment of steels, cathodic dips and anti-corrosion material injection as preventive measures. For virtually all, however, the last process is operator dependent.

This key part of Dinol's robotic system, therefore, involves a computer-controlled injection module with a variable number of piston operated nozzles (20 on the demonstration system) injecting predetermined amounts of treatment material into each section. The system is pre-programmed for a particular model and has a recognition system for different vehicles moving down a multi-model line.

In developing it Dinol also claims to have come up with the answer to a previously baffling problem: while considerable amounts of material would be injected into sections, its distribution and the depth of coating—on subsequent inspection—would be much less than the amount injected. Dinol concluded, during three years of experiments, that conventional solvent-based materials caused a "wicking tendency" and were subject to heavy evaporation, leading to a 60-90 per cent loss of the material injected. Thus the new materials being used with the robotic system have the wax-based in suspension rather solution.



Dinol cavity treatment by robot. The Trafilta 4000 robot hits the target with a precision of less than 0.5 mm

The ability of a car to withstand corrosion increasingly has become a significant marketing plank for manufacturers and has led to an increasing number offering five or six year warranties. Mr Wisen says he believes that some, at least of them may be storing up trouble for themselves on the basis of present technologies and application techniques.

Further, given that Dinol automatically takes apart all new models for treatment assessment, Mr Wisen suggests, controversially, that despite computer-aided design, not every manufacturer gets the vehicle right at the crucial design stage. "There are lots of good cars around; equally, we see some terrible solutions: cavities half-filled with foam, promoting corrosion, and front wing designs with virtually a built-in rust guarantee."

All of which sound like promotional hype were it not for the depth of Dinol's experience in the industry. It has long been integral to the operations of Volvo, with whom it has co-operated for over 30 years. During this time Dinol has become

systems consultant, tool developer and product supplier to the car maker, with tanker trucks operating on a shuttle basis between Dinol's and Volvo's plants.

The automotive industry forms just a part of the company's anti-corrosion activities, however. They include aerospace and since 1982, it has been involved in collaboration with Lufthansa aimed at reducing corrosion-induced operating costs. According to Mr Harald Claassen, Lufthansa's chief systems engineer for aircraft structures, about 4,000 man-hours can now be saved on repairs during major overhaul every five years, apart from component savings.

A U.S. Congressional study in 1978 concluded that across all sectors of industry, only about 15 per cent of corrosion is preventable—a figure with which Dinol does not disagree. In monetary terms, however, this represents a startling amount: 4.2 per cent of GNP, or \$70bn, in the U.S., while latest government estimates in Sweden are of an annual cost of Kr 23bn (about £2bn).

Materials

Plasma deposition

RAPID solidification plasma deposition (RSPD) is a technique which allows high integrity metal parts to be made by a spraying process in partial vacuum. It is under development at General Electric of the U.S. in Schenectady, New York. A further \$3.5m is being pumped into the project by the U.S. Government following a promising year-long \$2m first phase in which scientists and engineers from GE and Drexler University are participating.

Parts are formed with a spray gun that ejects a stream of molten metal at a suitably shaped former. The stream solidifies immediately and is built up layer by layer to achieve the desired shape, size and thickness. The former is then etched or machined away, leaving the metal part.

Dr R. W. Schmitt, GE senior vice-president for corporate R and D, thinks the technique will rival powder metallurgy and casting. He said: "By eliminating the need for many casting, forging and machining operations, the spray-forming technique offers the potential for dramatically increased productivity and lower costs."

The high energy gun produces a stream of ionised gases (plasma) at 11,000 deg C into which any alloy in powder form can be injected. The particles are instantly melted and are propelled from the spray nozzle at about 500 miles/hour.

After a short flight time the liquid droplets hit the substrate and are quenched at nearly a million degrees per second. The entire process takes place in a low pressure chamber to prevent oxidation of the metal in the atmospheric oxygen.

The technique produces dense, small-grained structures "potentially having much higher tensile strength and thermal fatigue resistance than can be achieved with conventional methods."

Such properties are important for highly stressed jet engine components like turbine blades, which are exposed to hot gases. Stronger, less thermally-affected blades allow higher operating temperatures in the engine, so enhancing fuel economy and performance.

The research contract was placed by Wright Air Force Base, with the overall aim of fabricating a number of advance aircraft components. GE is on (518) 355 8915.

Cash registers

Talking shop

HUGIN CLAIMS to be first in Europe with a talking cash register—at a CWS Superstore in Inverness.

The system, called Post-talker, uses speech synthesis "chips" to generate verbalised prices for the customer—including all the numerals, and the words "pounds" and "pence." The digitised versions of the sounds are kept in a semiconductor store and are released according to instructions from a bar code reader.

Bar codes on purchased items are scanned by a laser scanner. The labels give the European Article Number code which specifies the type of product and the price. A loudspeaker in the till then utters the price.

The time taken for the system to read the bar code and speak the price for the customer is much less than the assistant keying all the data on a conventional cash register. More on 01-251 4161.

Software

Financial analysis

A COMPUTER program which is used for the analysis of municipal bond issues has been developed by E. A. Nicholson & Company in New York. The American company said that Munibond runs on the IBM range of personal computers. This product is the fourth in the series which structure and analyse municipal finance in the U.S. More information on (212) 889 7535.

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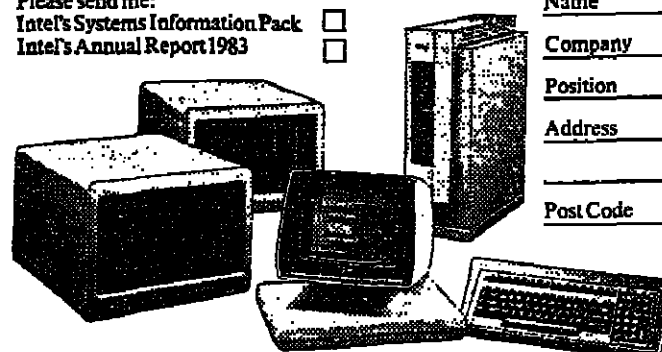
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THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

The 'networker' moves on a step

Brian Groom reports on the emergence of the neighbourhood office

ROGER WALKER is getting used to being one of the world's leading guinea-pigs when it comes to finding new ways to work. After becoming Rank Xerox's first "networker" 2½ years ago, he is now experimenting with another aspect of the society of the future — the neighbourhood office.

Business colleagues, including other networkers, started informally last year to share the use of rooms in an old Georgian house in Stony Stratford, near Milton Keynes, from which Walker's expanding personnel consultancy operates. "Now I'm putting this on a more formal basis and RX will monitor it," he says.

Networking is the project run by Rank Xerox, the office equipment company, in which employees leave the staff and turn themselves into independent limited companies. They sell their services to Rank Xerox and other customers.

Rank Xerox's 45 networkers, whose businesses range from computing to financial control and marketing, keep in touch with the parent company via microcomputers with a telecommunications link. The project is one of the most sophisticated developments in "telecommuting" or "teleworking", using terminals to work at locations (usually people's homes) remote from employers.

Rank Xerox claims a fair degree of success for its networking experiment so far. A key aim was to save on things like rent, rates, heat, power, maintenance and security, which make up 31 per cent of central office costs. It has been able to save £1m a year by vacating its Cleveland Street building in London.

No networkers' businesses have failed. Some are expanding and taking on their own staff. Walker, aged 39, now has a business plan which envisages £150,000 net turnover in the coming year. He has three direct employees and, with his company acting as an employment agency, has five contract staff (secretaries and data punch operators) on secondment to other organisations.

Walker is enjoying himself, though he admits to having experienced "moments of fleeting terror" caused by the problems of keeping work and cash flow-

ing in a small business. This year he is trying to introduce more systematic methods of marketing to cope with the peaks and troughs.

Phil Juddins, manager of headquarters personnel and resources at Rank Xerox believes many companies will want to adopt arrangements like networking in the next two to five years, because of the falling cost of microcomputers, the high cost of central offices and demands from employees for greater personal motivation and achievement.

"They should start now," he says. Rank Xerox knows of 12 other companies which have recently started networking-type projects. Networking has attracted huge interest in the press, and brought inquiries even from major Japanese companies.

'No networkers have failed. Some are expanding and taking on staff.'

One of the main potential problems of working from home is isolation—lack of contact with professional colleagues. Home-working also requires self-discipline so as to avoid distractions, though seeing more of the family is a compensating benefit.

Rank Xerox has taken steps to minimise isolation. Networkers are treated as the company's "extended family." Close contact is maintained, their names are kept on internal circulation lists and the telephone directory, and they are invited to departmental meetings. They can join Xanadu, the mutual support association of former employees who have left to start their own businesses (see accompanying article).

Now the company is trying out the "neighbourhood office"—the idea that people who work a long way from their various employers or customers can share office space in their home district, linked to their individual company headquarters by computer terminal.

This concept is aimed at providing mutual emotional support—sharing a cup of coffee

and advice when contracts are coming in slowly invariably helps.

The participants can also share the cost of secretarial services, and expensive items of information technology.

The idea is often discussed by academics, but there are few good practical examples. It is difficult to bring workers together organisationally unless they have some common link. A report by Rank Xerox's architectural consultants, Duffy Eley Giffone Worthington, on developments in Europe, shows the rarity of the advanced-technology neighbourhood office.

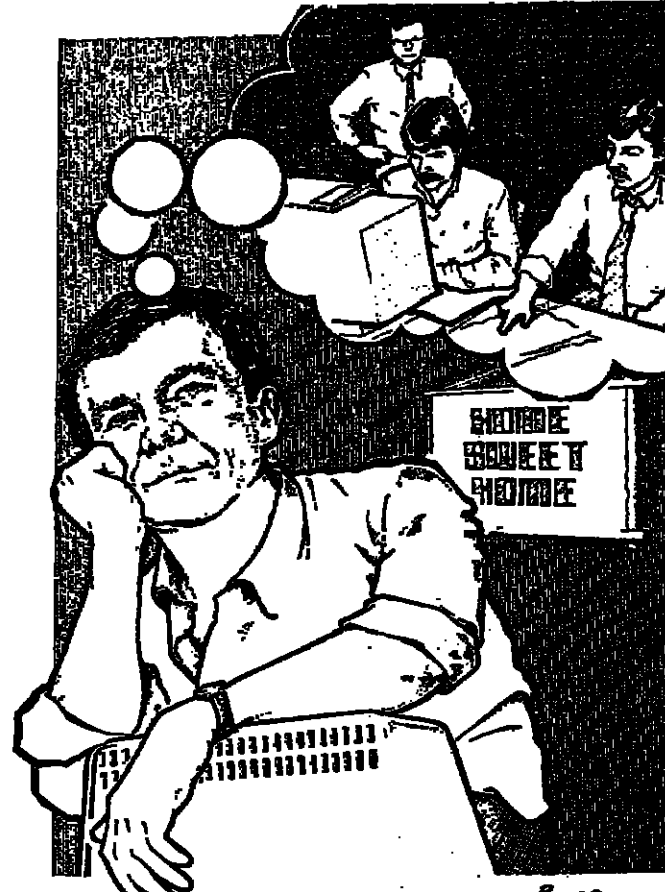
In France, the state telecommunications office, DGT, has sponsored neighbourhood centres but most have been very small-scale. A "tele-local" at Marolles-la-Vallée, intended to house at least 100 workers from 15 organisations, has never got fully under way, partly because companies have been lukewarm.

The Swedes are running an experimental community work centre at Nykvarn, 40 miles outside Stockholm, to monitor the impact of working away from head office and the use of data transmission methods, and to identify workplace needs.

Some users feel that the need to keep conditions constant for purposes of academic research has hindered the government-supported centre's development. When research funding stops in the middle of this year, a real-world business manager may be brought in to run it commercially. But its future remains uncertain.

Rank Xerox makes no grand claims for Roger Walker's experiment. Far from being a large, formal project involving many businesses, it is one man's premises being used informally by associates who drop in. Rank Xerox hopes that because it arose from a need, and because of the relationship between the users, it will succeed and grow naturally where more ambitious projects would fail.

Mostly the other users are people doing work for Walker, or putting work his way. Tesco, for instance, wanted someone to run a warehousing and distribution course. Walker picked up the business, and brought in



"One of the problems of working from home can be isolation"

a colleague to do the work for a fee.

What are the possible drawbacks of this kind of sharing? "You can sometimes let business interfere with relationships. It's extremely important to define contracts in detail at the outset to protect that relationship," says Walker.

The Stony Stratford office is equipped with two microcomputers—an RX 820 on loan and an Apple, with a printer which is also used as an electric typewriter—an acoustic data coupler, and an RX 1020 copier.

At home he has an RX 822 on loan. Walker does a third of his work at home, a third at the office, and a third at clients' offices. Increased flexibility between home and office is one of the likeliest features of society's future working patterns.

Rank Xerox is considering a second experiment—this time monitoring a new networker who would move in with a group of established personnel consultants in a shared office. The company's overall aim is to examine the equipment needs of such offices, and watch how small businesses inter-

their progress will be compared with similar developments like Xanadu's business support centres at Colnbrook near Slough, Tottenham Court Road in London, and a third one to be opened in Gloucester, where there are a number of ex-Rank employees. These provide temporary office hire, meeting rooms, word processing and clerical assistance.

Rank Xerox hopes that the neighbourhood office concept, like networking, will spread. But neither development will sweep through society's work patterns overnight. The bulk of people will work in traditional offices or factories for the foreseeable future. Networking is suited to professional work dealing with information, rather than process or manufacturing work.

The climate remains cold for leaving salary, company car, pension and secretary behind and setting up your own business, even with the help of an ex-gratia payment and preferential rates for office equipment. RX turns down half the people who apply to become networkers, and tries to select only the most resilient types.

Xanadu

Helping people avoid pitfalls

XANADU IS the mutual support organisation for former Rank Xerox employees including networkers who left their own businesses. It comprises 250 companies with £15m-£25m joint turnover and a total of 750 workers.

Founded in April 1982, its aims include exchange of business opportunities, information and services, group purchasing of things like private health care and life insurance, and providing a continued link with Rank Xerox.

It started when Rank Xerox, looking to reduce staff numbers, was thinking of enlightened alternatives to straightforward redundancy. One solution was to offer substantial packages of assistance to volunteers who wanted to start a business.

Richard Coon, Rank Xerox's former financial controller for Eastern Europe, the company's second networker, left to become a business start-up consultant and specifically to establish a support programme for these leaving Rank Xerox.

This involved personal counselling and a one-week course, which included advice on how to put a business plan together. "That's where most people go wrong," says Coon. "Everyone had to present his or her plans in front of other members of the group."

"It became clear that starting your own business never stopped. You go from one crisis to another. You need a continuing support association," Coon adds.

Xanadu was therefore born at a meeting at the White House, near Rank Xerox's Euston headquarters, in London. It had 60 members at first, and planned to meet regularly.

One of its first decisions was that it would not market the services of members, on the grounds that it was hard to market such a wide range of businesses as computer software and marketing consultants to bicycle hire in Scotland, sheep farming in Wales and a flower shop in Soho.

That decision has now been reversed, because members came to feel that business opportunities could be exploited. Two companies,

Xanadu Ltd and Xanadu Consultants Ltd have been set up to market members' services through mailing shots, advertising, and at exhibitions.

Xanadu has also started selling associate membership to companies outside the former Rank Xerox fold. They will get benefits such as courses and discounts, but will not be able to vote on strategy.

In spite of the national 33 per cent failure rate for small businesses, Xanadu has so far had no collapses—though a couple of members have returned to employment after deciding that going-it-alone did not suit them. Coon accepts, however, that failures are bound to happen in the future.

Office hotel

Some businesses are growing fast. Coon has set up a software company with two colleagues, called Percom. It is launching a complete personnel management system for microcomputers, which it hopes will grow tenfold over three years to a turnover of more than £5m, and will then be launched on the Unlisted Securities Market.

Xanadu runs two business support centres offering office space, facilities and clerical assistance for hire, and is setting up a third. It is thinking of setting up an "office hotel," Xanadu House, available for short- or long-term hire, on the north-western fringes of London.

The basic Xanadu subscription is £10 a year. Rank Xerox has helped out by paying bills up to a total of £16,000 in each of the first two years, and is assisting with premises and equipment for the support centres.

A number of other major companies have made approaches to Xanadu, seeking to know more so they can provide similar facilities for their own employees who may be keen to set up their own businesses.

Networking was first described on this page on July 15 and 20, 1982.



PAN AMERICAN is reintroducing its once popular last chance flight from London to New York. The 18.00 hours PA 103 from Heathrow to JFK was stopped in January after a wrangle with the UK Government. The flight is enthusiastically supported by passengers wanting to do a full day's work before leaving London and who do not mind the late night arrival in New York. Clipper and first class passengers get the use of Pan Am's New York lounge at Heathrow and limousine service into Manhattan after arrival.

THE CLUB system has spread to the cross-channel ferries. So many business travellers are now taking their own cars on business trips involving channel crossings that Townsend Thoresen is experimenting with club lounges. The first lounges are on the longer haul routes—Portsmouth to Cherbourg and Le Havre.

The lounges have steward service and offer free fruit juices, tea and coffee at breakfast time. The lounges cost £1 per seat on day sailings, £3 a seat on night crossings.

BRITAIN'S two major magazines for the business travelling community, Business Traveller and Executive Travel, are locked in a new marketing war. Both have now appointed publicists to drum up custom and the result could be even more of those "airline of the year," "hotel of the year," "rental company of the year" surveys.

Executive Travel's latest excursion is into the field of Club Class on airlines. It emerges antagonistic. If you hold the view that Club class is as good as the seating space then the findings are revealing. The distance between seats, the crucial knee-room, they 32 in on some short-haul flights. Aer Lingus and Iberia flights to a healthy 43 on some Thal, MAS and, oddly enough, Iberia trips. Several airlines offer only 17-inch seat width, which means a tiny bottom and a space but IFA manages 26.7 in.

SAS HAS added Hertz to its computer reservations system, thus allowing direct access to the car rental company's worldwide computer network and providing simultaneous booking facilities for both flight and car.

Arthur Sandles

INNOVATIVE PROBLEM SOLUTIONS THROUGH INFORMATION ON THE HIGHEST LEVEL

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THE ARTS

Common Ground/Sadler's Wells

Clement Crisp

In a praise-worthy burst of creativity, the Royal Ballet organisation put on three new works by house choreographers last week, with Jennifer Jackson's *Common Ground* for the Sadler's Wells troupe further evidence of the talent that must be encouraged.

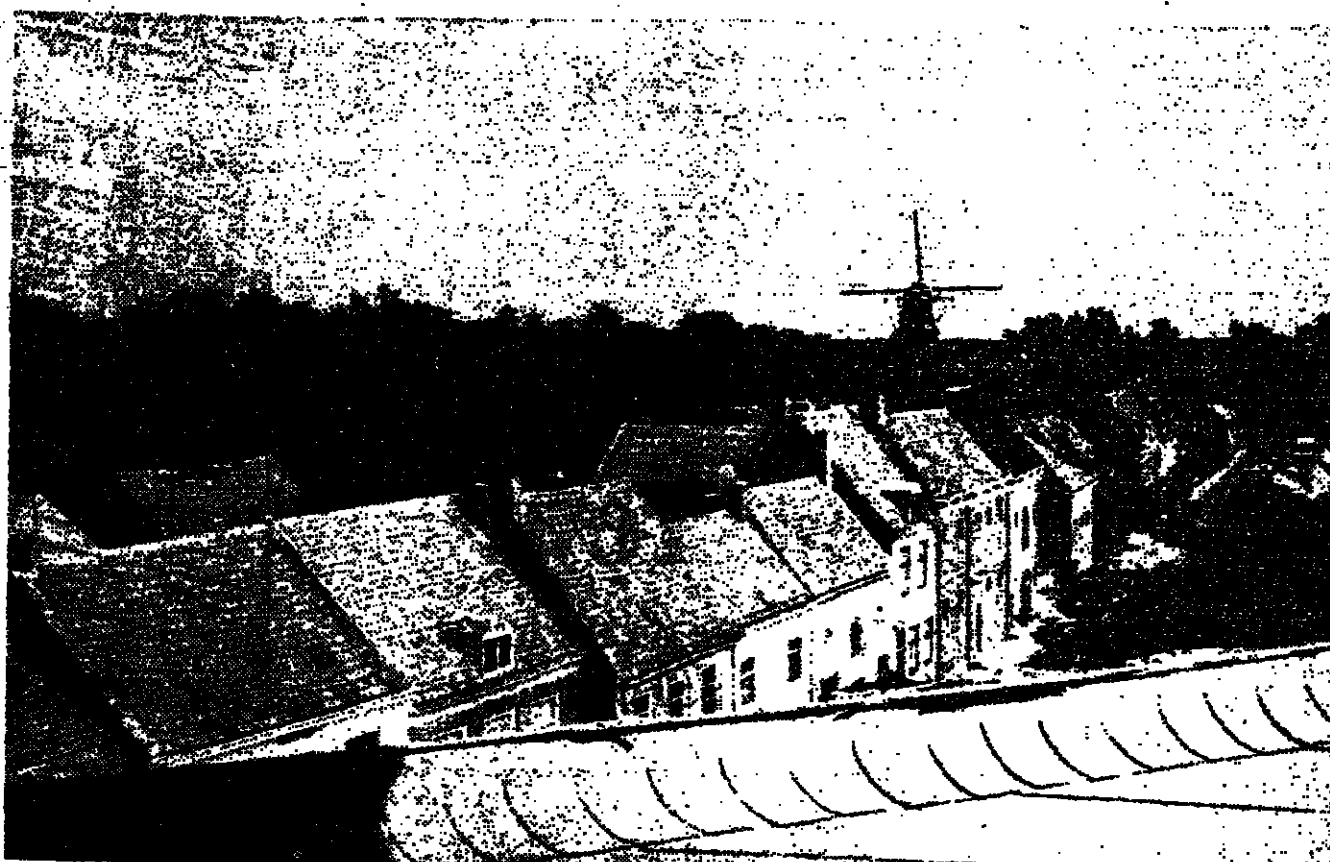
I saw Miss Jackson's ballet on Friday and enjoyed it even more on a second viewing on Saturday. The idiom is plotless, the cast numbers only eight dancers, but Miss Jackson responds to her score—Lennor Berkeley's *Serenade for Strings*—with alert, musically imaginative dances.

Her choreography does not stress what some observers seem to expect, that dutiful mimicry-mouseting of step for step (what disarray must *Agon* cause to their perceptions?), but there is a lively awareness of relationships between orchestral form and sonority in a movement language that already shows a true personal infection. Bodies twist and bend, there are abruptness, pivots, quick changes of dynamics and direction, and an acceptance of the classic idiom in the process of being extended by a fresh creative gift.

The performances of the cast are stylish—Samira Saidi

and Michael Batchelor in a duet; Karen Donovon, David Yow and Michael O'Hare as a trio skimming and skittering over the stage—and the only drawback to the work is its dress. The designer, Ella Huhne, has decorated the stage intriguingly with what look like fragments of scorched paper. The mistake of scorched paper, the mistake seems to me in repeating this idea for the costumes: the men in string vests and pale trousers, the girls in daintiest ivory frocks; all the clothes dirtied and singed as if rescued from the flames.

Rarely have attractive dancers come on stage looking so grubby and the pallid colours of the stage picture detract from the unexpected emotional shading of the dance. With the glum beach-wear on view at Covent Garden for *Return to the Strange Land* and the pallid conventionalities of costume for *Fleeting Figures*, the merits of practice dress in *Agon* were never more apparent than last week. Nor has there been more urgent need for a design policy which brings back elegance, chic and even some of the extravagance of present-day pop clothing, or the involvement of ideas—the involvement like Jean Muir to dress dancing. Away with diaphanous, and ill-cut girlish frocks and trousers which distort line and deform dances!



Windmills, pantiles and neat rows of small houses are the elements of Buren, near Utrecht, one of many well-preserved Dutch towns

Architecture

Colin Amery

A touchy problem in Holland

Holland is a country that projects a remarkably consistent image. It is flat and typical of any delta area. It has a unity of art and architecture and townscape. It is tidy, though densely populated, and always appears to be remarkably regulated, orderly and neat.

I was grateful recently to be shown how Holland is looking after its architectural heritage in several of the less well known towns and areas away from the tourist traps of Amsterdam, Delft and Haarlem.

What has always fascinated me about Holland is the close relationship between painting and architecture, and the particular pleasure the Dutch seem to take in the organisation of domestic, small-scale perfection. The "Dutch vision" has developed from a land where every inch of space matters. It is bound to be intricate and depend for spatial illusions upon the reflections in long canals and the huge expanses of infinite sky.

Like any other war-damaged and highly industrialised Western European country Holland's preservation problems are complex and demand sensitive and detailed legislation and management. There are well over 40,000 protected monuments and historic monuments in the Netherlands. Most date from before 1850 and a start has been made on the more delicate business of listing later buildings erected up to 1930.

In one major respect the listing process differs in Holland because there is a two-year

period of temporary protection during which owners and other affected parties can make their objections known. This is pleasingly democratic, but would lead here to endless wrangles and difficulties. I visited one particular problem building which is on the provisional list and is an example of general European significance. It was in 1930 that the architects J. A. Brinkman and L. C. van der Vlugt built the magnificent light and streamlined tea and coffee factory for the Van Nelle family firm. It is a model of modernist architecture, elegant, functional and efficient. It has just been declared a monument but the company (now part of Nabisco Brands Inc.) is objecting strongly to the new status.

It is a complex issue. Can a working factory in need of major repairs be a monument? Van Nelle wants to double glaze to save energy and renew elements of the rusting steel facades in aluminium. There is no doubt, from evidence of the area that they have already revamped, that only some of the original character remains. I suspect that the early modern movement buildings erected, after all, principally for their functional efficiency are not made of the stuff that makes monuments. We have the problem here with early works of the industrial revolution—a few make interesting museums, the rest are probably well cleared away and replaced by new kinds of industrial constructions.

It seems to me that industry

is a process and that there is no way that the surroundings of that process deserve the status of artistic monuments. The Van Nelle factory is a good test case, and an important one for structures like Battersea Power Station, the Hoover factory and other artefacts beloved by the industrial archaeologists. It is a touchy problem.

In the other fields of conservation historic houses and townscapes the Netherlands is advanced and serious. The most interesting thing for a British visitor is to see the efforts that go into the coordinating of the works of the various independent amenity groups and private agencies. There is a national coordinating committee for the protection of monuments and historic buildings which tries, with some success to unify the labours of the 600 organisations involved in the support of old buildings, fortifications, windmills, dykes, castles, villages and the countryside.

The extraordinary things is that there is no National Trust in Holland—this is a serious lack. Succession laws in the Netherlands mean that the contents of houses are inadequately protected and are frequently lost, divided or sold.

In a brief tour I saw the towns of Buren, Huisdun, Goes, Middelburg, Veere, Zierikzee, Leiden, Hoorn and Zwolle. I also visited the two collections of historic buildings that have been moved into "new" historic villages—Zaanse Schans at Beemster and Enkhuizen on the IJsselmeer. A visit to any one

of these towns would offer the opportunity of seeing complete slices of townscape of a richness and unity of scale not likely to be seen in many places in England. However it is at some price.

New architecture is often poor pastiche, with the honourable exception of the new town hall at Zwolle. The uses of the much restored town can be somewhat artificial, too close to the tourist trade to be real with everyday life in fact continuing in the concrete worlds that are never far away. The cloud of pollution hanging over Rotterdam is part of the price paid for the expensive isolated historic towns. Holland suffers from its small size—the past and the present are literally cheek by jowl and it is a miracle that so much is there, restored and accessible for enjoyment.

JVC to sponsor jazz festivals

JVC (Victor Company of Japan) is to sponsor four major international jazz festivals in Europe and America for an initial three-year period. The festivals will include the Capital Jazz Parade in London, from July 16 to 21, and the Newport, Rhode Island, Jazz Festival in the United States. The company will also back the Grand Parade du Jazz in Nice (July 6 to 17) and the Bad Seghers International Jazz Festival in Germany (July 10 to 12).

Brotsky Quartet/Wigmore Hall

Dominic Gill

I first heard the Brotsky String Quartet—who came together at the Royal Northern College of Music as long ago as 1972, when its members were still in their early teens—at the Wigmore Hall in 1980. Their playing was uneven and not always of the greatest finesse, but the jury were impressed by the young ensemble's unanimity, intelligence and drive, and awarded them a special medal for outstanding promise.

The Brotsky's performance

of Bartok's fifth quartet, the first work of their recital on Saturday night, might have been similarly judged. So much of it was right: bright-toned, impeccably tuned, enthusiastically driven with a powerful momentum. Only the musical gestures themselves lacked the precision of shaping and the poise demanded by that most exacting of all Bartok's quartets—the haunted musing and wild-frenzied melody of the first movement, the adagio's anxious quietude, the adagio's violent mood-

swings. It's a rare ensemble that can sustain both the right, very fast speed and the crystal clarity of articulation necessary for the finale. The Brotsky are nearly there, but not quite: the string quartet's triplets should run like liquid fire. Perhaps Beethoven's op.132 is a quartet which they have studied longer, or one with which they have the more instinctive sympathy. It is a far more complex work, but their grasp of style and gesture was far surer and more confident. There were some rough-

nesses (and a consistent underplaying—of the cello part by Jacqueline Thomas which must be cured); but in its broad lines it was a powerfully convincing account, worked with much lively insight and care. The finale still needs tightening; but the two shorter inner movements were clearly, wittily pointed, and the adagio Domogorsky had real radiance. I look forward to hearing more of Beethoven from the Brotsky

Peg/Phoenix

Martin Hoyle

If there is one image that sums up the British musical it is the spectacle of a well-loved figure from serious theatre kicking up his/her heels in undignified and more often than not unworthy high-jinks.

Based on the old romantic comedy *Peg O' My Heart*, this new musical is the work of David Heneker whose achievements include *Irma la Douce* and *Half a Sixpence*, so the material is not too unworthy, merely here rather dull. Still, Sian Phillips twitches her skirts to a throbbing *Sprechgesang* about the shoals of spinners in British India's marriage market. Is this the first musical to allude to the newly fashionable Raj?

The sets augur well: a round Japanese lantern of a sun or moon against a slatted sky, and cut-out banisters, balustrades and window frames flown in and out have the spare attenuated elegance of an Erté fashion plate. But almost at once the below stairs staff is lined up, arms pumping like principal boys, to be chuggingly unmemorable run-t-t-t-tum that has innocently served the most British musicals since the 1940s.

The story of a robustly unrefined and warm-hearted Irish-American heiress taken shudderingly to the bosom of a patrician English family down on its luck is paper-thin. Mr Heneker has incorporated the old song "Peg O' My Heart" as a theme tune (a sign of defeat,

surely) and some non-rhymes like "If you chose me how should my clothes be?" Some of his songs are all intro to the melody that never comes, as in the lament of the 30ish daughter of the house, poised desperately on the brink of adultery. Patricia Michael's style and vivacity deserve better. First The Mitford Girls, now this. She needs a break.

Possibly the most hummable number goes to the house-keeper as she advises a girl on how to win a man, in a song that may have militant feminists picketing the theatre. This is hard luck on Miss Phillips whose star entrance, arms outstretched, triggers off nothing more than a reprise; and, above all, on Ann Morrison's Peg.

Miss Morrison is American, and it shows. Sad to say, the clichés apply. Her attack punch and natural mastery of the musical as a form make the average Brit look like an end-of-the-pier turn. Her material is simply not worthy of her.

Miss Phillips could point her admittedly not very funny lines rather more; Edward Duke is brown away on a silly song; David McAlister's end display a strong voice. I'd like to see John Haver's ineptitude in stronger stuff, and the whole cast may well with will. Ian Judge directs to Peter Rice's designs. The album is already available. It may well become a collector's piece. A rarity, anyway.

Venice Preserv'd/Lyttelton

B. A. Young

"Lead him in virtue and the paths of honour," Belvidera prays for her little son; but honour makes a poor showing in *Orsino's* blood-drenched tragedy. Jaffer, Belvidera's husband, is recruited by his friend Pierre into a plot against the Venetian Senate because her father, Senator Priuli, has turned them into the street. Against his better judgment, Jaffer joins the plot, and she persuades him to betray the plotters to the Senate. They swear, as a reward, to spare the lives of his friends, but kill them at once.

As the last lights dim, Jaffer has renounced the Senate and returned to his earlier loyalty; to save Pierre from breaking on the wheel, he stabs him, and then himself. Belvidera, now out of her mind, dies on the two bodies. It may sound rather outrageous, but it is first-class drama, and the National's production under Peter Gill is as beautiful as it is exciting.

Jaffer is first seen sprawling on the ground, thrown out of Priuli's house by his immaculately uniformed servants. In his last scene, he crawls on his hands and knees to beg Pierre's pardon. But meanwhile, Michael Pennington has performed the neat trick of preserving a trace of Jaffer's dignity while following him through his constant humiliations, a clever performance of a part that might so easily swing too far one way or the other.

As Pierre, the honourable ruler by his feelings for the underprivileged, Ian McKellen gives what is in my experience the best performance he has yet achieved, and that is about as high praise as I can find. Whatever his politics, he never loses the air of a man of dignity and dedication. His first words to his mistress Aquilina (Stephanie Beacham)—"There's fool about you!"—are so rich with decent scorn that it never occurs to us to wonder why he should be sharing a profligate mistress with a silly servant. He can fill a single word with vibrant meaning, and he speaks Orsino's verse to perfection, in a manner that retains all the poetry while allowing for the everyday speech.

Belvidera is a part designed to show all the female merits, and Jane Lapotaire keeps her always a recognisable daughter of the senatorial class, a right-thinking woman who, even in the course of the dispute with her father, remains firmly on his side. There were times when I would have welcomed a little more power, but at big moments such as her speech about the prospects of massacre, and her last scenes, where her brain gently gives way, are fine. She doesn't have as much chance of variety as Aquilina, who has a splendidly comic time gratifying her senator (Hugh Paddick) with his demands to have her spit in his face or treat him like a dog.

Venice, in Alison Chitty's sets, is a dark and lowering city, based on a fine arched gateway topped by the St Mark lion, and varied by the dropping of the humans from a mid-air pretty, un-Venetian, to my way of thinking, but handsome. Virtually all the Venetian citizens wear dark blue uniforms trimmed with more or less gold according to their station; the English Ambassador, Eliot, and the evil Frenchman, Renault (pronounced in scrupulous French, complete with the initial "r" in the throat) wear other, but equally inconspicuous colours. Belvidera is always perfectly dressed, even after three years of poverty.

This is a production to be seen at all costs, not only for the splendours of the playing and the direction, the little incidental beauties such as the beautiful dress of Michael Pennington, but also for the intrinsic charms of the play itself.

Arts Council

finance director

The Arts Council has appointed 34-year-old Anthony Blackstock as its new finance director. He will take over from Anthony Field who is leaving the Council after 27 years to join Theatre Projects. Anthony Blackstock worked for the Arts Council from 1976 to 1981, since when he has been head of radio finance at the Independent Broadcasting Authority, where he has been responsible for the finances of Independent Local Radio.

Arts Guide

Music/Monday, Opera and Ballet/Tuesday, Theatre/Wednesday, Exhibitions/Thursday. A selective guide to all the Arts appears each Friday.

April 13-19

Music

LONDON

Halle Orchestra conducted by Zdenek Machal with Robert Cohen, cello, Edgar and Bruckner. Barbican Hall (Mon), (0388881)

London Symphony Orchestra conducted by Claudio Abbado with Maurizio Pollini, piano. Beethoven. Royal Festival Hall (Tue) (0283191)

London Sinfonietta conducted by Lothar Zagrosek with Teresa Cahill, soprano and John Constable, piano. Stockhausen, Dallapozza, Muldowney and Ben Quen Elizabeth Hall (Tue) (0283191)

Royal Philharmonic Society and BBC Symphony Orchestra conducted by Sir John Pritchard with Brigitte Fassbinder, mezzo-soprano, Delius, Mahler and Strauss. Royal Festival Hall (Wed)

Royal Philharmonic Orchestra conducted by Yehudi Menuhin with Edward Wulfsberg, violin, Glinka, Debussy, Tchaikovsky and Brahms. Barbican Hall (Wed)

Philharmonia Orchestra conducted by Simon Rattle with Florence Quivar, mezzo-soprano, and John Mitchell, tenor. Mahler, Webern, Berg and Mahler. Royal Festival Hall (Thu)

Jack Gibbons, piano: Bach, Chopin and Ravel. Quaker Elizabeth Hall (Thu), (0253191)

Royal Philharmonic Orchestra conducted by Richard Harvey with John Ordon, piano, Bartok, Sibelius, Tchaikovsky and Mussorgsky/Ravel. Barbican Hall (Thu)

Beethoven's Fifth, Fifth Street Machin and his orchestra. (0890747)

PARIS

Grace Buxley recital, Geoffrey Parsons, piano (Mon), Théâtre de l'Athénée (028727)

Orchestre National de France and Radio France Choir conducted by Emmanuel Krivine with Christiane Eda-Pierre and Elisabeth Söderström. Soirée Francis Poulenc-Jean Cocteau (Mon), Salle Pleyel (010622)

Ensemble Orchestral de Paris, Jean-Pierre Wallès as conductor and soloist, Christian Crenna, violin, Manfred Stitz, flute, Vivella (Mon 2.30pm, Tue and Thur 10am and 2.30pm), Théâtre des Champs-Élysées (024777)

Orchestre Philharmonique conducted by Gerard Alkon, Olivier Gordon, piano, Prokofiev, Bartok (Tue), Radio France, Grand Auditorium (0241316)

Orchestre Philharmonique, Ensemble Rampe, Maitre de Radio France conducted by Henri Fargue, Pergolesi, Corelli (Wed) Saint-Louis-en-l'Île (0241518)

Orchestre de Paris Conducted by Gary Bertini, Mahler's 8th Symphony (Wed, Thur) Salle Pleyel (0250790)

NEW YORK

New York Philharmonic (Avery Fisher Hall): Zubin Mehta conducting, Lorne Munroe, cello, Bloch, Tchaikovsky (Tue), Zubin Mehta conducting, Leon Mitchell, soprano, Thomas Allen, baritone, West-

minster Choir directed by Joseph Flummerfelt. All-Brahms programme (Thur), Lincoln Center (0242424)

Orchestre Philharmonique de Paris: Charles Brüssler, tenor, Malcolm Smith, bass, Gwendolyn Bradley soprano, Janice Taylor mezzo-soprano, Jon Humphrey, tenor, Justin Diaz, bass. All-Bach programme (Wed), Lincoln Center (0242424)

Merkin Hall (Goodman House): Elaine Greenfield, piano; Pamela Goldstein, flute recital; Debussy, Ravel, Gaudet, Martin (Thur), 67th W of Broadway (0287191)

Y Chamber Orchestra (Carnegie Hall): Gerard Schwarz conducting Alfred Brendel, piano. All-Beethoven programme (Thu) (047459)

Chicago Symphony and Chorus (Orchestra Hall): Sir Georg Solti conducting, All-Schubert programme (Thur) (4358122)

WASHINGTON

National Symphony (Concert Hall): Riccardo Chailly conducting, Vladimir Ashkenazy, piano, Ives, Brahms (Tue, Wed, Thur), Kennedy Center (2543776)

ZURICH

Tonhalle: Tonhalle Orchestra conducted by Aldo Ceccato, R. Strauss, Stravinsky and De Falla. (Tue to Fri), (2611580)

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Monday April 16 1984

The German 'spring'

MORE THAN 15,000 people from East Germany have been allowed to leave for the West since the beginning of this year. During the whole of 1983 only 11,000 got out. The authorities in Bonn believe that another 15,000-20,000 will be allowed to take advantage of relaxed East-West German relations which have become known as the German 'spring'.

On humanitarian grounds this letting-up on the part of East Berlin is much to be welcomed. Patient diplomacy on the part of the West German leadership over many years has been rewarded. Herr Helmut Kohl, the head of the East German regime, has summoned the courage to take a calculated risk.

It is not to detract from these achievements if one adds that the current of migration is only a fraction of what one would expect it to be under half-way normal circumstances. East Germany may have opened a safety valve, but by any standards acceptable in the West it is still ruled with a heavy hand. The political motives and reasoning behind the East German concessions remain a cause for conjecture. It has been suggested that emigration is a welcome means to reduce unemployment, open or hidden. The known facts do not bear this out. The migrants come from all sections of East German society.

Soft line

What the evidence does show is that people dissatisfied with the regime provide the bulk of the migrants, if only because they have pursued their wish to emigrate with great persistence. The conclusion, therefore, looks obvious: Herr Kohl is trying to rid himself of disaffected elements. It is an argument based not merely on his own political convenience. It should also be saleable to the Russians, whose ultimate authority he neither may nor wishes to cross. He can say to Moscow that a sensitive policy in East Germany counteracts any danger of the Policy experience being repeated there.

Beyond that, by keeping on speaking terms with Bonn, Herr Kohl secures material advantages for his republic which indirectly benefit also the rest of East Europe. The DM 1bn (\$266.6m) credit extended to East Germany last year is the most obvious case in point.

One must assume that Moscow has resigned itself to Herr Kohl's soft line: otherwise he would have been stopped a long time ago. But the Kremlin has put down a marker: the pin-prick disturbances to western civil air links with West Berlin

last week were a reminder that ultimate authority rests with Moscow. For the moment, however, Moscow appears to believe that it should not be intransigent with Bonn, and with some other western European states, if only to keep alive the chance that transatlantic cracks will appear in the NATO alliance. Its well-known fear of German resurgence—let alone German reunification—is taking second place.

Migration rate

This is a matter of interest to Germany's western neighbours as well. French concern has been obvious, not so much about the higher migration rate from East to West Germany as about the peace movement in West Germany and about the sympathies which it commands in the Social Democratic opposition. These are worries that go a long way to explain President Mitterrand's interest in closer Franco-German and western European defence co-operation.

Recent governments in Bonn have handled these delicate matters with responsibility. Those in authority have resisted any temptation to tempt them were to play with fire. Whatever hotbeds on the Christian Democrat side may have said in opposition, the Government of Dr Helmut Kohl has not deviated from its predecessor's acceptance that the East German state is a fact of life in Europe.

When one of Dr Kohl's closest advisers says that Bonn does not intend to "depopulate" East Germany he is not merely stating the obvious: he is putting out a signal to reassure East Berlin. Only if the regime there feels secure can it follow a half-way flexible policy. But, however secure it feels, it will have to go a long way before accepting the argument made by some East German churchmen, and commanding some sympathy among West Germans, that if only East Germans were allowed to travel freely the vast majority would not even wish to leave for good.

On a larger historic canvas, recent events are a reminder that Germany remains at the centre of Europe, and that the German question is still one of the central issues in Europe. Anyone who thought the issue would go away once Bonn and East Berlin had agreed on the framework of their relations by the treaty of 1971 is sure to be disappointed. That treaty created the potential for a more civilised relationship without undermining either side's alliances. It is not only in German interests that that potential should be continuously enlarged.

"We feed you—don't starve us," said the farmer's banner at the Whitehall protest rally against the recent Common Market farm price agreement. To judge by the clutter in the farming press since the deal was struck, British farming as we know it is about to disappear.

Around the ranks of the farmers critics have built a barbed wire fence of hostility. Everybody seems to think farmers are too fat, the beneficiaries of a bloated protectionist system which has gone on enriching them through the worst recession since the 1930s. Even when Mr Michael Jopling, the Agriculture Minister, announced details of the price agreement in the Commons, the response lacked passion.

As Sir Michael Franklin, Permanent Secretary to the Ministry of Agriculture, put it in gentle Whitehall-speak at the Ministry's annual November outlook conference: "The tide of public opinion is running against the industry. That is something which democratically-elected governments must take into account."

The case against the farmer has become all too familiar. According to official figures, farmers last year scooped £1.4bn in grants and subsidies from government and Brussels, although many critics think this figure should be at least doubled to reflect the true cost of bridging the gap between Common Agricultural Policy prices and so-called world market prices.

But, even on the Ministry's figures, the farmers are in a hole. Their entire net income last year was only £1.5bn—just £100m more than the official estimate of the aid bill.

As Richard Body, a rural Tory MP, put it in his highly influential 1983 polemic, *Agriculture: the Triumph and the Shame*, farming has become a "double bonus" of petting and public money to sustain it in a state of euphoria.

Mr Body's thesis is that farm prices should be allowed to fall rapidly to world levels, and that the Government should force farmers on poorer land to abandon cereal production. Lower cereal prices would boost livestock and dairy farmers, who would thus inherit the bulk of Britain's mostly damp and hilly farmland.

The extent of the gap between CAP prices and world prices is a matter of some controversy as many international prices are set in narrow markets which are subject to heavy influence by political decisions in Washington. World prices are also pushed lower by the fact that the EEC dumps its own CAP-induced surpluses.

Even more contentious are the polemicists' orders of magnitude that can be gleaned from a recent parliamentary answer, when the Ministry was asked to state the annual cost of Britain's main farming foodstuffs at CAP prices and at world rates. The difference came to more than £2bn.

The several reasons why it is now that farmers are in such ill odour, rather than at some previous point in the sports car and at world rates, followed the 1947 Agriculture Act.

Intensive farming, or at least the image of it presented by pressure groups, has robbed farming of its pastoral aura. Subsidising farmers to drive lazy cows down country lanes is one thing. Paying them to

British Agriculture

Brussels: the first turn of the screw

Ian Hargreaves on the impact of the EEC's policy change

ravage the landscape is another.

But most of the reasons are to do with the CAP and the fact that the system has protected farm prices against inflation throughout the recession, despite extremely depressed world commodity prices.

Since the Thatcher Government has also shielded farmers from the ill-effects of petting, by refusing to revalue the green pound, agriculture has enjoyed a double bonus of a type not to be taken for granted. The green pound is the artificial currency in which British farmers are paid for their exports.

The cost of the CAP and its associated homegrown subsidies—farmers do not pay rates, for example—rises as CAP prices and world prices diverge. This year, the Government has forecast the total subsidy bill at £1.7bn, up from only £677m in 1979-80. Mrs Thatcher, intent on attacking Brussels spendthrifts, was bound to end up attacking British farmers.

From the farmers' point of view, things look rather different. They see themselves as victims of successive governments' enthusiasm for self-sufficiency in food.

Asked, in 1973, to ensure that Britain's accession to the Treaty of Rome did not lead to a damaging rush of EEC food imports, farmers have performed well. They produce 62 per cent of Britain's food, compared with under 50 per cent in 1972. The figure is 77 per cent if you exclude crops which cannot be grown in British weather. Britain still, however, has a sizeable food trade deficit, at a ratio of about 2:1. Imports to exports, in money terms.

But the price of food, pushed by advisers from the Ministry and sustained by a technological revolution which is still boosting yields in almost every sector, British farming has enjoyed a miracle of productivity.

With 12 per cent fewer workers and 2 per cent less land, real gross farm output has risen by 14 per cent inside a decade.

Wheat yield has risen from 4.52 to 6.3 tonnes per hectare. The average UK cow now de-

livers almost 5,000 litres of milk a year, against less than 4,000 a decade ago. If our manufacturers' productivity had matched that of our home-eggs per bird up 10 per cent—Japan would not have had a look-in.

By making arable farming economic on marginal land, the CAP has quite literally changed the British landscape. Oilseed rape, whose brilliant yellow flower will soon be chequering the countryside from the south coast to Scotland, was almost unknown before 1973. Last autumn, 261,000 hectares of the

crop were planted—a 17.2 per cent increase on the year before.

The reason is CAP subsidies, which are part of Brussels' quest for self-sufficiency in oil. Given here overproduction is becoming a problem and rapeseed prices are to be cut by 2 per cent under the new deal.

As Britain has moved from being part of the solution to the common agricultural problem—a hungry market in 1973—to contributing to overproduction, most farmers have seen change coming.

The deal hammered out two weeks ago in Brussels will cut most common prices by 1 per cent. British dairy farmers, in addition to price uncertainty, must deal with a 7 to 10 per cent cut in output, enforced by quota.

The NFU says the deal will cost farmers £200m in lost income in a full year. Dairy leaders have spoken of 5,000

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Agriculture Minister Michael Jopling: implementing the cuts

to 10,000 of the country's 57,000 dairy farmers going out of business. NFU economists, however, admit that there are great uncertainties about estimating the impact upon dairy farms since these vary so greatly suggesting widely differing courses of action for different farmers.

But as he faces this new era, just how fat is the British farmer? The answer is that he is, on average, asset-rich but cash-constrained; a distinction which political portraits seldom make.

That is exactly what farm machinery makers and other suppliers fear.

Spending on farm equipment fell by over 8 per cent in 1983—the last for which figures are available—and there has been net disinvestment (an excess of depreciation over gross capital formation) in the last four years.

One body which without doubt has major problems on its hands is the Milk Marketing Board, the farmer-owned organisation which not only distributes milk, but also owns 80 per cent of the butter factories in England and Wales.

A 10 per cent cut in milk production is expected through to a 30 per cent cut in butter output, with unpleasant consequences for the UK's 16,000 creamery workers.

The board's whole way of life has been geared to handling rapidly rising milk production (up 22 per cent since 1973) and, unusually, searching for new interest payments was in single figures when we joined the Common Market. In 1981, it topped 30 per cent and with lower interest rates stands today at around 27 per cent.

The rise in land prices (see chart) has, however, underpinned the industry's balance sheet and the debt-equity ratio of about 12 per cent has changed little and would still make a manufacturer green.

Land, however, is not a very liquid asset and, farmers argue, they were not to blame for the

institutional buying which did much to drive prices higher in the mid-1970s. In the last three years, prices have stabilised and the price of poorer land has shown recent signs of weakness.

Mr Robin Leigh-Pemberton, a Kent farmer who is also Governor of the Bank of England, took the opportunity of addressing a farming audience in January to warn that if political support for the industry weakened, banks were likely to become less keen to lend.

His message, he said, was "a need for somewhat greater financial prudence" during the passage through this justifiably more demanding political climate.

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cow has fallen by about £30 or 8 per cent in the last three weeks, but dairymen have other ways of reducing output.

Much of the increased yield in the last decade has been achieved by feeding concentrated food, consumption of which rose 10 per cent. It will now make more economic sense to let the cows eat grass.

One of the things which angers the dairymen most, however, is the belief that the big and undoubtedly prospering central farmers, whose incomes have increased in real terms by 60 per cent in the last five years, have come through the Brussels holocaust comparatively unscathed, having been protected by their size.

There is no doubt that the arable farmers will get their desserts next year.

Meanwhile the poor pig and poultry farmers, whose net income in the year just ending is put at one quarter of the real 1973 level, just wish they had benefited from a CAP regime in the first place.

If the political nerve of the agriculture ministers holds—a big "if"—to be sure—and the cuts and quotas approach is sustained, there can be no doubt that farmers' belts will tighten.

Whether the process ever could or even should go the whole radical distance advocated by Richard Body is another matter. Although the fundamental reasons for an interventionist farm policy—security of supply and stability of production—are less pressing than they were in 1947, they remain deeply rooted.

It does seem, however, that the glory days of intensive arable and dairy farming in Britain may be over. Governments have always been rather good at inventing catchphrases to exhort farmers to produce more "Big for Britain" and "Food from our own resources, to name but two.

Perhaps Mr Michael Jopling's advisers at the Ministry can come up with a slogan for the late 1980s. Somehow, Cut back the Community" or "Trim for the Ten don't have the same ring. How about "Jack it in for Jopling?"

A service for job-seekers

THE Manpower Services Commission has just announced plans to reorganise its national network of job centres, provoking a hostile reaction from the unions and the Labour Party.

When 3m Britons are still unemployed, retrenchment by the MSC does sound odd. Why should it want to cut the budget of its employment division by 10 per cent a year and reduce its staff by 17 per cent by 7,000 by 1985? The effort to find jobs for the unemployed should surely be a top priority.

Yet, when the MSC's nine commissioners (three of them union representatives) discuss the proposals next week, they should listen hard to the logic behind the changes.

In saying it needs fewer staff and a smaller budget, the MSC's employment division is facing two realities. First, the drastic deterioration of Britain's labour market since 1980 sadly has made the job centres' task easier. Fewer vacancies and many more job seekers make those vacancies much easier to fill. Ploughing more resources into job centres will not create any more vacancies.

Second, the 1970s saw a huge upgrading of the public employment service. Seedy employment exchanges have given way to nearly 1,000 bright, orange-fronted, job centres, many occupying prime high-street sites. This expansion raises the question of the appropriate balance between private and public employment agencies.

Unlike private agencies, job centres do not charge employers. So taxpayers sub-

sidise individual employers looking for staff. When unemployment is high this is desirable. Private agencies do little for the disabled or the long-term unemployed, as they always have an incentive to put forward the most attractive applicants.

Merits

Job centres can practise reverse discrimination: 48 per cent of candidates they offer for jobs are the long-term unemployed. The public service also reaps economies of scale: its average cost of filling a vacancy is only £70, well below private agencies' costs, and it fills vacancies about five days faster than anybody else.

Whatever the merits of a bigger or smaller government service, the MSC's proposals for reshuffling its resources look sound. By squeezing the middle and increasingly under-utilised tier of urban job centres, the MSC can beef up its main city centre offices and increase the total number of outlets, from 995 to between 1,100 and 1,200, although more of them will be job "shops" or "points" offering a skeleton service.

The MSC is reducing staff by exploiting the trend towards self-service (the unemployed do not want tea and sympathy) and by greater use of computers and videos. Psychological studies show that job seekers consider more diverse jobs when self-service replaces individual counselling.

Critics should remember that the MSC is committed to maintaining its services for the disabled and long-term unemployed. With that safety net, it should be free to experiment. There is a case for putting job points in supermarkets, libraries, post offices and church halls, and why not consider more flexible opening hours for job centres, for example, at weekends in busy city centre offices?

Transatlantic car rally?

"I believe the pendulum is about to swing back in favour of British cars in the U.S.," says Malcolm Bricklin, explaining why he is in London. "The success of Jaguar has pushed open the door. Remember, Britain used to sell 200,000 cars a year in the States. Now the total is below 20,000."

The tall, energetic Bricklin has already ensured himself at least a footnote in U.S. motor industry history books.

He set up a company in the States with \$12,000 in 1968 to import Subaru cars from Japan. The company now sells 150,000 cars a year and is worth, he estimates, \$500m on the over-the-counter market.

Bricklin sold out to Fuji, the producer of the cars, in 1974 because he dreamed of making his own sports cars. He ventured false because he could not get the manufacturing quality right. "I don't want anything whatever to do with manufacturing from now on," he says.

He returned to the car import business in 1982 when Fiat

Men and Matters

withdrew from the U.S. market. Bricklin set up International Automobile Importers to deal directly with the companies which previously made Fiat's sports cars—Bertone and Panini. Those are the badges on the cars which by June, he says, should be selling at the rate of 700 a month.

Bricklin now wants to expand; which is why he is in Britain testing cars to see what's available.

His search will lead him inevitably to Austin Rover. Britain's only volume car producer which, coincidentally, is hoping to get back into the U.S. market in 1986 and says it will probably need a partner there.

Bricklin has made formal contact yet. But he points out: "If they want an importer, we're the only independent with experience there is in the U.S."

Hot and cold

A solar-powered freezer sounds something of a paradox. But the lateral thinkers at Bognor Regis, Sussex, based Lec Refrigeration have developed just that. Not for use in Bognor, sunny as that resort can be, but in the parts of the world where electricity does not reach and the sun does.

The freezer might be ideal for gin-and-tonic drinkers on safari. But it has a much more serious purpose: keeping vaccines cool and making ice in which they can be transported.

BP Solar Systems, who make the panels, has won approval for the freezers from the World Health Organisation, and there are 20 out on field trials. They sell for a hefty £3,400 each but, once set up, the running costs are low. The battery stores power to keep going through the night and for up to six sunless days. Some day

there could be solar freezers throughout the Sahara. Every oasis should have one.

Taking care

When you run a firm like Alex Ball's Business Intensive Care, performing operations on ailing companies, you very soon learn to recognise some symptoms of small business troubles.

Ball, aged 61, an industrial engineer, turned management "trouble-shooter" for EMI and later a consultant with Price Waterhouse and the Economist Intelligence Unit, started his own management practice in 1975.

Last year, he claims to have saved 20 clients—generally by being wiser than the owners rather than merely drawing up a report on it.

Some of the danger signs to watch for in a small company, he says, are a chairman aiming for a knightship, or chairman unwilling to inject new equity for fear of losing control.

A move to new, prestige offices is often the way into difficulties, Ball says.

He is wary also of managers who have taken over from their parents; and of wives who do not let their husbands pledge the family home as a guarantee against the company.

The Marriage Guidance Council and the Pregnancy Advisory Service have at times, he says, been useful contacts. Ball tells me: "You've got to be prepared for anything in this business."

Many a slip

Nothing can be taken for granted in the fast-moving world of the Unlisted Securities Market.

That point was unwittingly driven home by stockbrokers Grieverson, Grant in their latest monthly review of the USM,

which includes a report on controversial stamp-dealers Stanley Gibbons.

The report was printed one day after the Stock Exchange withheld permission for dealings in the company, because of allegations against its then chairman, but three days before the company abandoned its attempt to come to the USM.

Following the delay of the placing, Grieverson concludes confidently, "we would recommend a weak hold for the shares."

Garden party

Many of the craftsmen and plant specialists who came to lay out their exhibits for Liverpool's National Garden Festival next month have completed their work—though not without the odd blower.

The British site managers knew they might have some problems when the Chinese asked for 10 gallons of pig's blood to use in preparing the paint for the pavilion they have built.

A suggestion that they might use turpentine instead was rejected, and so two drums of pig's blood were duly provided from the local abattoir.

The Turks turned up flustered after their lorry had been stopped and searched by customs officials in Germany. Acting on a false tip that there were drugs on board, the officials almost ruined the Turks' mock coffee house.

Japanese gardeners ordered two bags of lime but through some error of translation were delivered 20 tons of limestone chippings.

Top marks for flexibility go to the Spanish. They held a national competition to design a garden but when the winner arrived he was informed that the stone windmill he wanted could not be built in time.

Within five minutes, the Spanish team had designed another garden on the back of an envelope, and a week later it was ready.

Observer

HEAR

Who could fail to wax lyrical in a sumptuously appointed conference suite at the Inn on the Park? Such beautiful surroundings are enough to turn even the most reserved company spokesman into an orator of legend.

As an arena in which to discuss affairs of business, there is simply nowhere more conducive to inspiration, more attentive to detail, or more richly memorable than the Inn on the Park.

Whatever the matters in hand, whatever the numbers involved, the Inn on the Park can make your every resolution stand out in a style nothing short of magnificent.

Cuisine inspired by our famous restaurants, impeccable service, and elegant decor blend their irrefutable roles to create the perfect setting for any business gathering.

But then, perfectionism in all things has always been a convention here at the Inn on the Park. Call David Pettie or Tony Rivers on 01-4

FOREIGN AFFAIRS: EUROPEAN DEFENCE

1954 comes round again

By Ian Davidson

BY RIGHTS, the political situation in Europe ought to be a cause of hand-wringing despair. Eleven years have passed since Britain joined the European Community, and the member states are still haggling with relentless obstinacy over relatively small amounts of money, which would look tiny if they spent half as much energy trying to make the Community market place work better. At last week's meeting of the Council of Ministers, the impasse was so total that there was no negotiation at all.

By rights, this deadlock should be provoking cries of alarm all round, larded with bitter denunciations from the Continent of Mrs Thatcher's lack of any Community spirit and her grasping demand for every last sou. The Community budget is over-spent, and will go more deeply into the red as a result of the expensive presents which the farm ministers have given each other, to ease the pain of their belated first steps in reforming the Common Agricultural Policy (CAP).

By rights, the air should be vibrant with rage and recrimination. Why then is the atmosphere so calm, so apparently serene?

There are, I think, two complementary explanations. The first is that the package deal is so complete in principle, and so nearly complete in detail, that an overall settlement is not in doubt and need not be far off. Farm ministers have taken the first painful step towards reform of the farm policy. Tighter controls on Community spending, especially on agriculture, are within grasp. There will be a mechanism to limit Britain's financial contribution; all that remains is to set the figures which will set the mechanism going.

The second explanation for the apparent serenity is more fundamental, and much more speculative, and it is this: it begins to look as though the circumstances for a political rapprochement between the main countries of western Europe may be more propitious now than at any time in the past 30 years.

Given the nationalistic bickering which has hobbled the European enterprise for so long, this

may seem an extravagant piece of wishful thinking; and so it may turn out to be. But there is some concrete evidence that it is not just wishful thinking; and there are several general reasons why the European countries should start treating their relationships with each other with a seriousness which has long been lacking.

The most concrete evidence of political rapprochement is the flowering interest, especially in France and Germany, in closer European defence co-operation. President Mitterrand has activated, for the first time, the military consultation procedures allowed for in the 1963 Franco-German friendship treaty. The French government is pressing for the re-vitalisation of Western European Union, the defence treaty which binds Britain, France, Germany, Italy and the Benelux countries. And last week, the European members of Nato agreed on the necessity for much closer collaboration in arms procurement, partly for reasons of efficiency, economy and standardisation, partly in order to secure a less unfavourable balance in arms trade with the U.S.

One of the interesting things about the revival of interest in Western European Union, which was established in 1954, is the number of parallels that can be found in the pattern of events on the international scene in the years leading up to it, and the pattern of events which we have been living through. Naturally, these parallels are anything but perfect; yet it is almost as if a phase in European history, a fundamental choice-point in the process of European integration, which the Europeans missed thirty years ago, were coming around for the second time; perhaps they will bungle it again.

In 1947, Britain and France signed the Treaty of Dunkirk, against a revival of German aggression; the following year, and partly in reaction to the spreading Communist takeover in Eastern Europe, notably in Czechoslovakia, this was enlarged as the Brussels Treaty, to include the three Benelux countries. In 1949, Nato was formed; by the following year, as a result of the Cold War tensions, which had been greatly aggravated by



President Mitterrand (left) and the late President de Gaulle

the Berlin blockade in 1948-49, and by the outbreak of the Korean War in 1950, America was already pressing for Germany to be re-armed as a full member of the western camp. To overcome still-lingering fears of German militarism, the French proposed (in the Pleven Plan) a European Defence Community, with an integrated European army under the authority of common European political and democratic institutions.

The German social democrats resisted the EDC and the sister plan for a European Political Community, just as they resisted the establishment of the European Coal and Steel Community, partly because they were opposed to any political integration in the West which might mortgage the prospect of German reunification. But by 1954, after years of tortuous negotiations, a second EDC was ratified by all the original Six, except France. In the summer of that year, the National Assembly voted down the EDC, and the plan was abandoned for ever.

The EDC was defeated partly by an unlikely alliance of Gaullists and Communists, who were opposed to German re-arming and to any surrender of French sovereignty, and more generally, because many Frenchmen were still afraid of Germany. To alleviate this anxiety, successive French governments made repeated efforts to persuade the British to join; but Britain was only prepared to support, not to participate in the scheme.

After the collapse of the EDC, events moved with remarkable speed. Within two months, the Brussels Treaty powers enlarged the treaty under the name of the Western European Union, to include Germany (and Italy). The way was now open to end Germany's status as an occupied territory, to restore it to full sovereignty, and to enrol it as a full member of Nato, which took place the following year.

The historic parallels are at least suggestive. The early 1980s have seen the worst deterioration in super-power

relations since the Cold War; Afghanistan echoes Korea, the Polish take-over the Czechoslovak take-over; the U.S. pressure for more European defence spending (and the deployment of Euro-missiles) echoes the U.S. pressure for the re-arming of West Germany; then, as now, the initiative for European defence co-operation came from France; and as if determined to echo the Berlin blockade, the Russians are again interfering in the civil air corridor over East Germany.

In practical terms, WEU was intended to do very little, and it faithfully lived up to that modest assignment; all defence responsibilities were immediately delegated to Nato. The chief importance of the treaty then was its political symbolism, and remains its chief importance today.

For example: the most serious blow against joint European security was struck by General de Gaulle in 1966, when he withdrew France from military integration in Nato. Ever since then, it has been Gaullist doctrine that France retains complete freedom to decide whether or not to line up with its allies against a Soviet attack, in this respect the rhetoric of the Socialist government is as Gaullist as its predecessors.

Yet the Brussels Treaty rigorously excludes any such freedom of manoeuvre. The North Atlantic Treaty leaves clear loop-holes for governments to opt out of the common defence, but the Brussels Treaty is categorical: 'If any of the High Contracting Parties should be the object of an armed attack in Europe, the other High Contracting Parties will... afford the Party so attacked all the military and other aid and assistance in their power.' If the French Government wishes to breathe new life into WEU, the other High Contracting Parties will seriously claim the right to opt out of joint defence.

Vanity, if nothing else, would prevent the French from admitting de Gaulle was wrong in 1966: they will not really need to remobilise yet another set of institutions. Yet he added, as if in an afterthought: 'But we're not hostile...'

purely European treaty body.

For example: some people in this country think we should disband BAOR (the British Army of the Rhine) in order to pay for a really splendid navy, dispensing law and order throughout the world. In itself, the idea is absolutely dotty. But the WEU treaty requires Britain not to withdraw its army and tactical air force from Germany against the wishes of a majority of the other member states. WEU is a symbol of Britain's continental commitment.

Despite the historic parallels between 1949-54 and 1979-84, there are also enormous political and psychological differences. The EDC was scuppered because its wild federalist ambitions, designed to keep German militarism under control, were totally incompatible with the nationalist dreams of glory still nurtured by Britain and France. Now, France's main anxiety is not of German militarism, but that Germany may drift off into an unattached neutralism. Britain's imperial delusions have been reduced to the exhausting defence of 1800 souls in the south Atlantic, and even Mrs Thatcher's government has concluded that, in the handling of East-West relations, it has more in common with France and Germany than with Ronald Reagan's America; when it comes to Star Wars and technology transfer, the community of European interests is even more obvious.

Of course, some things do not change. Thus, as now, the initiatives for closer European co-operation come from the Continent; Chancellor Kohl has promised a new initiative later in the year for closer political integration in Europe. Then, as now, that characteristic British attitude is one of scepticism; but perhaps the scepticism is a little less self-satisfied than it used to be. The other day, I asked a senior government official about the reactivation of WEU. He trotted out all the usual reasons for caution: mustn't upset the Americans, mustn't cut across the European Community, perhaps we don't really need to remobilise yet another set of institutions. Yet he added, as if in an afterthought: 'But we're not hostile...'

Lombard

The Donald Duck tax effect

By Anthony Harris

ONE OF the great pleasures of my childhood was watching Donald Duck (and even Felix the Cat—I am as old as that) in those sequences where they would walk off the end of a plank or the edge of a cliff, and carry on blithely for several steps before they noticed the void beneath. The technicians of comedy call it the slow burn, I believe.

It must, I suppose, be this buried memory which has made me greet British industry's reaction to the Budget with such unseemly amusement. Mr Lawson said quite clearly what he was doing; but it has taken a solid month for the fuse to burn, and for industry to wonder if it may not be treading air.

Now, by letter, circular and telephone, the squawks are coming through. This change is actually going to make us pay more tax, even when the rate is cut. It is going to reduce the return on any given investment. And, Good Heavens, if inflation should accelerate, we are going to be in a cash squeeze again. One would hardly believe that the Chancellor had said, in so many words, that he intended to reduce the tax privileges of capital investment, and to abolish the concession which had been made necessary by inflation.

What all this means, of course, is that, as Mr Lawson also said, you cannot reform tax without making some people worse off; and it is natural enough if they then wonder whether the reform was a good idea in the first place. It is this debate which is now getting off to a belated start; and because it is so belated, the criticisms are going to be somewhat muted. If you want to make a loud protest without looking foolish, you have to make it fast.

So far as the inflation effects of the changes are concerned, there is very little to be said in theory for what Mr Lawson has done. Companies will, even at low rates of inflation, be made to pay tax on money they

need to maintain their stocks and replace their equipment. This is perhaps meant to stiffen the resolve of employers to keep costs (and thus inflation) in check; and here the slow burn is discouraging. Will people who were so slow to notice what the Budget implied respond to this incentive?

The trouble is that companies and their accountants have only themselves to blame. They have had a decade since the ill-starred Sandilands Report to make sense of inflation accounting; perhaps because the tax concession gave them the fruit without bothering to tend the tree, they have failed. The vanity of misleadingly high historic cost profits has defeated commonsense, and Mr Lawson has now brought back the tax on vanity.

The debate on the tax treatment of investment is a much more complicated one, which will run and run, and there is space here to answer all the special pleaders, economic Stalinists, admirers of President Reagan who have begun to find their voices—not to mention the architects of the former regime. Sir Douglas Wass could state an elegant case against Mr Lawson. For the time being, I will make just two points in his favour.

First, the case cannot be argued simply from the point of view of companies. The point where it makes sense to substitute labour for capital cannot be the same for companies, which need pay only those still employed, as for the rest of us, who have to pay the unemployed. Until now Mrs Thatcher's Government has seemed blind to this obvious fact. It is refreshing to have a Chancellor who is not.

Second, it is simply not true, as critics argue, that the new regime will depress the return on capital. It will raise the cost of capital (except of equity capital, which could be revalued); and this is every schoolboy economist must know tends to raise the return on capital—the real return, which pays the millman. Less quackery, please.

Co-operation on defence

From Mr Peter Vannack MEP

Sir—Your leader, 'Cooperation on Defence' (April 10) is a sensitive analysis of the problem of getting the European nations to act together to defend the freedom they share.

The Joint Working Party on European Security in the European Parliament has spent most of its time during the past 2½ years exploring the possibilities of what should and can be done to improve security coordination, preparing the ground for formal reports in the European Parliament, and informally exchanging observers at plenary sessions with the Assembly of the Western European Union and latterly with the North Atlantic Assembly.

It might help readers of the Financial Times, and in particular Ministers, to consider how best to use national and European parliamentary institutions to achieve the desired end. Better to achieve a degree of overlap between them than to pursue a mindless inter-institutional demarcation dispute.

The subject is so important as to merit the best use of these political tools in order to provide ministers with the guidance they need, where each institution contributes according to its competence and experience.

Thus the European Parliament can contribute practically in the following areas: 1—U.S. embargo of the Soviet Union concerning key elements of the United States pipeline; this matter has been debated on several occasions in the European Parliament, includ-

ing the recent report by Mr Allan Rogers MEP on Community gas policy.

2—Rationalisation and co-operation in the acquisition of weapons technology; the European Strategic Programme in Information Technology (ESPRIT) should provide firms in the defence sector with the electronic components and manufacturing equipment for these weapons.

3—The R and D programmes such as those for the stimulation of scientific and technical potential of the European Community and for basic technologies represent civilian activities with military spin-off, on the analogy of the Japanese transfer of civilian laser technology to the U.S. defence industry.

4—The European Parliament is a forum for the parliamentary representatives of nine and shortly of 12 European States; it exchanges parliamentary delegations annually with, among others, the US Congress, LAFTA, ASEAN, the Gulf States and the People's Republic of China, where security issues are raised.

In these discussions prior recognition of Irish neutrality favours rather than inhibits the pursuit of those security objectives which other member states and political groups share.

The European Parliament is making inputs on security matters, the quality of which ministers must judge. It is a parliamentary institution which has shown vitality in debating security matters with its facility to raise urgent issues on a monthly basis with the Conference of Ministers.

It is to be hoped that a desire for economy in organising international parliamentary cooperation will pervade ministers' minds as much as the desire for economy in the achievement of security objectives.

Peter Vannack, Chairman of the Joint Working Party on European Security, Centre European, Plateau du Kirchberg, Luxembourg.

Letters to the Editor

As much as the desire for economy in the achievement of security objectives.

Peter Vannack, Chairman of the Joint Working Party on European Security, Centre European, Plateau du Kirchberg, Luxembourg.

Timing of tax coding notices

From Sir Lawrence Airey, Chairman of the Board of Inland Revenue

Sir—May I take up the point made by Mr Burdett (April 10) who suggests that all PAYE code changes for the new tax year—both those known to be needed before the Budget and those arising from it—should be issued by the Revenue in time to be brought into effect at the start of the tax year.

It is an attractive idea, but I am afraid it does not reckon with the calendar. Budget Day can, and sometimes does, fall after the start of the tax year; thus, in 1978 it was on April 11. And where the Budget comes before April 6, as it has done in recent years, there is a great deal to be done between the announcement of personal tax changes in the Budget and their implementation for PAYE.

This year, for example, the parts of the tax tables dealing with tax at the higher rates need to be recalculated, printed and distributed. That is why these changes cannot be brought into effect this year for pay days before May 11.

I am afraid, therefore, that I see no practical alternative to doing the job in two stages, on the lines of the present arrangements. However, I can assure Mr Burdett that we do our best to keep the work imposed on employers by the Budget, and indeed by PAYE generally, to a minimum.

The arrangements mentioned in my earlier letter, under which the great majority of code changes flowing from the Budget do not need individual notifications but are done by employers making a fixed alteration depending on the code suffix, are an example of this.

Done this way, the job is simpler for employers, as well as for the Revenue, than handling a large number of separate instructions for code changes. Lawrence Airey, Inland Revenue, Somerset House, WC2

Abolition of wages councils

Mr J. F. Greenough

Sir—Practical economics, not textbook economics must dictate the abolition of Wages Councils. Like so many other pieces of legislation, the councils were intended to protect the very young when the school leaving age was 14 or 15. Now, new entrants in the industry have to work for 16 years before they can obtain a school or college leavers who have attained 16 at which age they must be paid the adult rate from the time of engagement.

Lawson's withdrawal of stock relief that the days of high inflation are over and assumes that because his bankers, shareholders, stockbrokers and financial journalists do not equate as to his current cost accounts (which do not, of course, fully account for inflation) inflation does not affect his company's operations.

The opinion of Mr Lees and many company chairmen has clearly been latched on to by the Chancellor as a gift from the Gods (?). If Mr Lees does not want 45 per cent or whatever of 5 per cent of his stock value as a cash gift next year I know many men who would gladly use that money.

Turning to the fact that financial analysts and their ilk do not ask about GKN's CCA results does not mean that inflation does not have a deleterious effect on that company's results. J. W. Nichols, Hill House, Bolton St Peter, Halesworth, Suffolk.

principle of showing a true and fair view.

How this is done would have to be left to the reporting companies themselves. They have received enough suggestions over the years to guide them.

Second, an adjustment of profit trends is needed to allow for comparability. These suggestions are by no means new, but they do require further consideration before the new start forecast is allowed to occur and we continue with what has become largely a purely theoretical exercise for accountants. W. E. Dann, Stock Exchange Buildings, 33, Great Charles Street, Queensway, Birmingham.

From Mr J. W. L. Nichols

Sir—I deduce from Mr Lees's letter (April 4) that he does not favour any form of inflation adjustment to his historical cost accounts. He seems to deduce from Mr

This causes resentment among trained workers who are reluctant to pass on hard-won knowledge to those without experience who are paid the same amounts. But where employers are unscrupulous and intend to pay below the Wages Council rate, they merely break the law and wait to see if there are complaints from the employees.

But as the individual who accepts a low pay rate is often also drawing unemployment pay (and supplementary benefits) there are unlikely to be objections as they will neither pay tax nor national insurance. In every way the state loses in income tax, NI contributions (both employer and employee) and sometimes VAT, for when the employee is paid direct from the "bill" the full value of goods sold is not registered.

The Wages Council Inspectors are a courageous and hard-working body and they know that their work only covers the tip of the iceberg. They only operate where there are specific complaints.

The Youth Training Scheme employs young people long enough to know their new employees, unless they are outstanding, nor rewards the young people adequately for the work they are required to do. Like the present Youth Opportunities Programme, it is an expensive failure. Only the Young Workers' Scheme helps to restore the differential and allows the scrupulous employer to take on new young persons and train them without upsetting the balance between the inexperienced and experienced.

Consider the cost effective-ness of the Youth Training Scheme, £750 a year to the state, as against £5,000 (plus) for the Youth Worker gets over £40 a week while the YTS £27. Those of our friends who carry out similar schemes to us have an equally high rate of success and engage their young in permanent employment.

Responsible employers have always wanted a trained work force and before the Wages Council restrictions this was possible through apprenticeship schemes, as it still is where the council orders do not obtain. Yet the lower-paid industries deserve skilled employees just as much as those in the higher technologies.

J. F. Greenough, The Danish Kitchen, 9, Willow Ave, Lytham, Lancs.

Credit for suggesting 'Jewel in the Crown'

Sir—In his otherwise excellent piece on 'The Jewel in the Crown' (April 4) Christopher Dunkley did not acknowledge Irene Shubik's contribution to the project. Miss Shubik, who produced the film of Paul Scott's 'Staying On', suggested to Granada the idea of televising 'The Jewel in the Crown'. Asher Rosenberg, 14 Downalong, Bushey Heath, Herts.



Company vehicle fuel cards and where they fall short.

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SECTION II - COMPANIES AND MARKETS

FINANCIAL TIMES

Monday April 16 1984

Travis & Arnold
Timber, Building Materials, Heating and
Plumbing Equipment for the Construction
and Allied Trades. Northampton 52424.

Connoisseur's credit prompts speculation on French return

BY PETER MONTAGNON, EUROMARKETS CORRESPONDENT
IN LONDON

GAZ DE France is raising \$100m in the Eurocredit market in the first public operation by a French state borrower since Credit National launched its £100m credit last November.

News of the credit on Friday immediately prompted market speculation that French state names might be poised to resume their borrowing in this market after a long period of concentrating mostly on international bonds. But the deal is very much a connoisseur's affair giving special advantages to the borrower that the floating rate note market cannot match.

Led by Chase Manhattan and Société Générale it is a 12-year revolving standby credit that operates much like an overdraft. Gaz de France has total flexibility in drawing the full amount in one lump sum which would have been the case for a floating rate note. Basic margins on funds drawn will be ¼ per cent for the first ten years rising to ½ per cent over Eurocurrency rates thereafter. Repayments begin after a grace period of five years.

Banks will receive a commitment fee of ¼ per cent, which is very low by current standards, but there will also be an additional ¼ per cent retroactive commitment fee paid on funds drawn after a period of six months in which the credit has not been used. This is designed to discourage erratic use of the facility with the borrower constantly borrowing and repaying the loan.

A 12-year maturity on such a deal is rare in Europe, and this will give Gaz de France the chance to extend the profile of its foreign debt. One lesson for the market is that top-rated borrowers with ready access to the FRN market now need a special reason for tapping the credit market instead. That is one reason why so many current deals are

BNF Bank bond average			
April 13	50.534	Previous	50.749
High	100.000	1983-84	Low
			50.000

small specialist operations with bells and whistles attached.

Still awaited is a large credit from Denmark. It wants to replace cheaply up to \$1.5bn in withdrawn credit commitments, but here again its reason for choosing the credit market is specific. It needs a stock of withdrawn funds, but the FRN market only offers immediate cash.

Elsewhere the loan being arranged by Dresdner Bank, Lloyds Bank International and Credit Agricole for the Soviet Foreign Trade Bank is now to be increased to \$250m from an original \$150m. This is rather more than the original commitments of about \$200m and extra funds are being sought in the market. In Asia, Malaysia is sounding out banks for another large loan, possibly containing an element of sterling.

Argentina's leading creditor banks are to recommend that the payment of \$350m due today on last year's bridging loan be deferred for two more months. Apart from that last week's talks with Sr Bernardo Grinspun, the Economy Minister, made little progress. Much now hinges on Argentina's talks with the International Monetary Fund which seem likely to drag on beyond the initial April 30 deadline.

Mexico's \$3.5bn credit is to be signed on April 27, while Venezuelan officials are to meet creditor banks shortly after Easter for a further round of rescheduling talks. A main item on the agenda will be the need for a further extension of the 90-day freeze on principal repayments which expires at the end of the month.

NatWest floater well received

BY MARY ANN SIEGHART IN LONDON

"IS IT a bond? Is it a share? No, it's a perpetual floater." National Westminster Bank's bond-with-no-maturity, launched last Thursday got almost as rapturous a reception as the film of Superman, making the market wonder whether perpetual floaters 2 and 3 will soon be on their way from other borrowers.

Back in January, when floating rate note euphoria was at its height, bankers claimed that the maturity of a floater was immaterial as long as it was actively traded. Fifteen-year and then 20-year bonds were launched very successfully, but when Sweden's 40-year FRN met with a lukewarm reception, the market became more sceptical. And NatWest, which was then about to launch its perpetual floater, held back instead.

Last week proved more propitious. Having been issued as a \$200m deal - \$100m to be launched initially and \$100m on tap - the initial tranche was doubled to \$200m within hours. Then on Friday, lead manager County Bank raised the

immediate portion to \$300m and the tap to \$300m. Still the bond traded well over par.

Investors were obviously attracted by the ½ per cent spread over the six-month London interbank offered rate (Libor), which compared with a yield of around ¼ per cent over Libor for comparable bank paper with fixed maturities.

On the other hand, investors seemed not to worry about the status of the offering. It is ranked as junior subordinated debt, which means that it comes after outstanding debt but ranks above equity and preferred stock.

If a dividend is passed on its shares, NatWest can stop paying interest on the bond and it will not be declared in default. However, all backdated interest must be repaid before any more dividends are distributed. The deal has been rated AA2 by Moody's and AA- by Standard & Poor's. (Existing NatWest bonds have an AAA rating.)

So though it is slightly safer than holding equity, it is probably riskier

than many other FRNs. Yet the notoriously risk-sensitive Eurobond investors either did not notice or did not care.

If they did not care, it was probably because they had worked through the possible disasters and decided that the NatWest notes were no more risky than other bank paper. After all, if NatWest is in such dire straits that it has to pass a dividend, the chances are that the same world banking crisis will make the payment of interest on normal FRNs issued by other banks just as doubtful.

Dealers were still wondering on Friday why NatWest had so much better a reception than Sweden. One reason must have been timing - Sweden's bond was launched just as investors began to have doubts about the durability of the FRN market.

Another factor may have been the name - though Sweden's bond is AAA and NatWest's is AA -, bondholders may feel that a bank would have more incentive to look

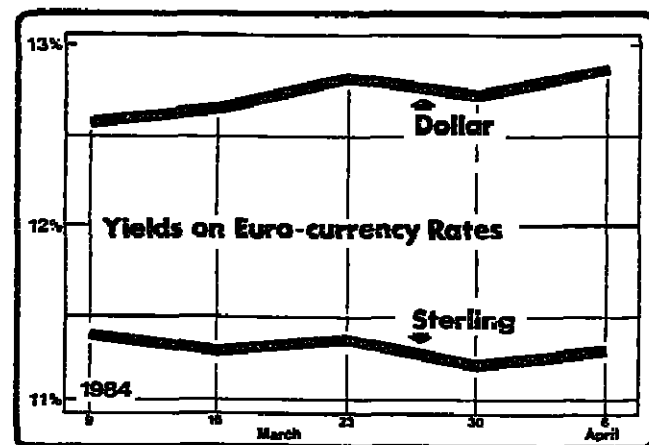
after its own paper in the long run than a sovereign borrower.

And finally, investors seem to be more attracted to a higher spread over Libor than a discount on the price. (Sweden's issue has been trading at a price of around 97.90.)

Other borrowers may well be tempted to follow the NatWest route - it gives them what is effectively permanent share capital without having to dilute their equity and at a cost which, taking tax into account, compares favourably with the dividend payout on the shares.

However, they would have to be rated extremely highly for this type of debt to be palatable to investors. Other UK banks will probably have watched this issue with great interest, especially since the higher tax liabilities involved in the last budget will eat into their capital.

Other dollar bonds fared less well last week. Holland Airlines Finance, for instance, launched a \$100m bond guaranteed by KLM on Friday which seemed tight in the



morning when prices were rising and a lot tighter by the afternoon when the benchmark U.S. Treasury long bond dropped in price by a whole point on a larger than expected rise in U.S. industrial production.

Holland Airlines is swapping the proceeds for floating rate money which it will then put on deposit for KLM. The resulting margin will not be reflected on KLM's balance sheet, so the transaction is rather like instantaneous defeasance.

Much more popular last week were sterling bonds. Dollar and

sterling rates seem more or less to have decoupled and despite the fact that sterling coupons are much lower, investor demand is still strong.

The D-Mark sector is being dragged down both by the New York market and the weight of new issues. Japanese warrant deals are embarking on the same downwards price trend which they recently suffered in the dollar sector.

The Swiss franc market is in limbo, with investors sitting on the sidelines. Prices were unchanged all week.

NEW INTERNATIONAL BOND ISSUES

Borrowers	Amount	Maturity	Av. life	Coupon	Price	Lead Manager	Offer yield	Borrowers	Amount	Maturity	Av. life	Coupon	Price	Lead Manager	Offer yield
U.S. DOLLARS															
Affiliated Co. \$	120	1989	15	3	100	Namora Int., Nikko Secs.		SWISS FRANCES							
Canada Comm. Co. \$	30	1989	5	7 1/2	100	Merrill Lynch, Drexler Eir.	3,000	WGR Spunk Play Co. ** \$	100	1988	-	1 1/2	100	SBC	1,750
ENB \$	100	1984	10	12 1/2	99 1/2	Nikko Secs., Rott. Fleming, IBJ Int.	7,500	Tokyo Sasei Chain ** \$	30	1989	-	1 1/2	100	Swiss Volksbank	1,875
Sanborn Fin. \$	100	1980	5	12 1/2	99 1/2	Deutsche Bank, BNP, SBC	12,957	Tamara Construction ** \$	50	1989	-	2 1/2	100	Gracorp Bk. (Switz)	2,125
	150	1981	7	12 1/2	100	As above	12,824	Tasmanian Resources \$	100	1994	-	5 1/2	98 1/2	SBC	5,533
Mitsubishi Corp. \$	100	1991	7	12 1/2	100	Salesman Bros., CCF, CSFB	12,759	Tebu Railway Co. \$	100	1982	-	4	100	SBC	4,800
Interfirst Bank \$ (a)	100	1989	5	1 1/2	100	Sumitomo Fin.	12,500	Sobu Restaurant ** \$	50	1989	-	1 1/2	100	USC	1,875
Bank of Montreal \$ (a)	50	1984	10	1 1/2	100	Merrill Lynch, Nikko Secs.	12,500	Canada ** \$	200	1989	-	5 1/2	100	SBC	5,125
Nat. West Bank \$ (a)	500	-	-	3 1/2	100	Mitsubishi Fin.	12,500	Moscow Int. Fin.	100	1994	-	-	-	USC	5,750
Holland Airlines Fin. \$	100	1991	7	12 1/2	100	Goldman Sachs, Merrill Lynch	-	Tokyo Steel ** \$	30	1989	-	1 1/2	100	USC	-
Japan Synthetic Rubber \$	30	1989	5	7 1/2	-	CSFB Mitsui Fin. Asia, Chase Manhattan	-	HTM Toys Bearing ** \$	100	1989	-	1 1/2	100	SBC	-
Fujitsu Ltd. \$	30	1989	5	7 1/2	-	Asia County Bank	-	Tashkent Soda ** \$	40	1989	-	2	100	USC	-
Sumitomo Corp. \$	50	1989	15	3	100	Orion Royal Bank	12,250	Funkawa Electric ** \$	100	1989	-	1 1/2	100	SBC	-
						Yamauchi Int. IBJ Int., BNP-Bank	-	Toshiba \$	100	1992	-	2 1/2	100	CS	-
						Nomura Int.	-	Toshiba ** \$	100	1989	-	1 1/2	100	CS	-
						Daiwa Int., Schröder Wagg.	-	Sumitomo Realty ** \$	85	1989	-	2	100	CS	-
						Sumitomo Fin.	-	Mitsubishi Mining ** \$	30	1989	-	5 1/2	-	CS	-
D-MARKS															
C. Itoh Ind. \$	25	1989	5	3 1/2	100	Deutsche Bank	3,500	STERLING							
Hannan Co. \$	80	1988	5	3 1/2	100	Dresdner Bank	3,500	Prov. of Nova Scotia \$	60	2019	35	11 1/2	99.887	SG Warburg	12,011
Daikin Ind. \$	80	1989	6	3	100	West LB	-	New Zealand \$	100	1989	5	10 1/2	99 1/2	SG Warburg	10,759
Hydro-Quebec \$	100	1989	5	7 1/2	100	West LB	7,500	GURDERS							
Hydro-Quebec \$	100	1994	10	7 1/2	99 1/2	West LB	7,824	World Bank ** \$	150	1989	5	8 1/2	100	ABN	8,250
Sweden \$	250	1994	10	7 1/2	100	Deutsche Bank	7,875	YEN							
Mount Isa Fin. \$	100	1992	8	7 1/2	100	Commerzbank	7,750	Asian Devt. Bank \$	250	1996	10.32	7.3	99.70	Nikko Secs.	1,473
								ORB \$	200	1994	9	7.3	99.55	Nikko Secs.	7,500
								World Bank	200	1994	10	7.3	99 1/2	Nikko Secs.	-

* Not yet priced. † Final terms. ** Placement. ‡ Convertible. † Floating rate note; coupon is spread over 6-month Libor. (a) Spread over 3-month Libor. † With warrants. ‡ Placement in Asia. (c) Includes \$200m tap. Note: Yields are calculated on AIBD basis.

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Société Bancaire Barclays (Suisse) S.A. Société Générale Standard Chartered Merchant Bank
Sumitomo Trust International Verband Schweizerischer Kantonalbanken Veritas und Westbank
M. M. Warburg-Brinckmann, Wirtz & Co. Dean Witter Reynolds Overseas Wood Gundy Limited Yamaichi International (Europe)

All these Bonds having been sold, this announcement appears as a matter of record only.



£40,000,000

Forsmarks Kraftgrupp Aktiebolag

(Incorporated in Sweden with limited liability)

Guaranteed Retractable Bonds 1989/94/99

Unconditionally guaranteed as to payment of principal and interest by

The Kingdom of Sweden

Samuel Montagu & Co. Limited

Baring Brothers & Co., Limited

Commerzbank Aktiengesellschaft

County Bank Limited

Credit Suisse First Boston Limited

Daiwa Europe Limited

Hambros Bank Limited

IBJ International Limited

Kleinwort, Benson Limited

Lazard Brothers & Co., Limited

Merrill Lynch Capital Markets

Morgan Grenfell & Co. Limited

Morgan Stanley International

Orion Royal Bank Limited

S.G. Warburg & Co. Ltd.

Enskilda Securities

Göttingen

PKbanken

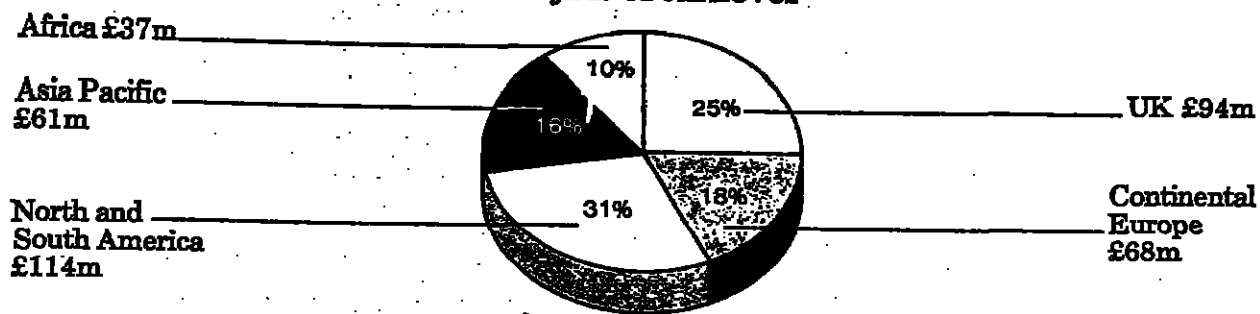
Svenska Handelsbanken Group

April, 1984

APV HOLDINGS

	1983	1982
Turnover	£374m	£339m
Profit before tax	£18.3m	£17.6m
Earnings per share: basic	34.1p	34.4p
diluted	32.0p	30.6p
Ordinary dividends	11.25p	10.5p

Analysis of turnover



Extracts from the statement by the Chairman, Sir Ronald McIntosh KCB

Although there was no marked improvement in the demand for capital equipment, we achieved a modest increase in turnover and pre-tax profit in 1983.

The dividend has been increased for the seventh successive year. Our balance sheet has again strengthened; shareholders' funds have increased by £10 million to £114 million and the debt-equity ratio has been reduced to 10 per cent.

We continue to give the highest priority to the development of our technology and to foster innovation throughout the group.

Orders received in 1983 were 11 per cent up on 1982. We entered 1984 with an order book only slightly higher than 12 months previously but the prospects for growth in the major economies of the world seem to be improving and this should bring an increase in the demand for capital goods.

Several of our companies in Europe, the USA and elsewhere produced good results in 1983 and we expect most of them to do well again this year. So far as group profits for 1984 are concerned, much will clearly depend on the strength of the hoped-for recovery in demand for capital goods.

APV — market leaders in advanced process plant for the food, beverage and chemical industries.



APV HOLDINGS PLC
APV House, Crawley, West Sussex RH10 1HH.

The AGM will be held on Tuesday 22 May 1984 at APV House, Crawley.

Copies of the Report and Accounts will be available after Monday 30 April 1984 from the Secretary.

The above figures are extracted from the full historical cost accounts of the group for the year ended 31 December 1983 on which the auditors have given an unqualified opinion. The full accounts will be filed with the Registrar of Companies after the Annual General Meeting.

This announcement appears as a matter of record only

March 1984

**British
Caledonian
Airways**

U.S.\$107,000,000

TERM CREDIT FACILITY
For Two Airbus Industrie A 310-200 Aircraft

Arranged by

BANK OF AMERICA INTERNATIONAL LIMITED
NATIONAL WESTMINSTER BANK GROUP

Provided by

Bank of America NT&SA
Bankers Trust Company, London Branch
Banque Nationale de Paris Group
Citibank N.A.
The First National Bank of Chicago
International Westminster Bank PLC
Security Pacific National Bank
Algemene Bank Nederland N.V., London Branch



Bank of America



**National
Westminster
Bank PLC**

New Issue

This announcement appears as a matter of record only.

April 13, 1984



NEW ZEALAND

DM 250,000,000

7½% Deutsche Mark Bearer Bonds of 1984/1991

Issue Price: 100% - Interest: 7½% p.a., payable annually in arrears on April 14 - Redemption: on April 14, 1991 at par - Denomination: DM 1,000 and DM 10,000 - Security: Negative Pledge Clause - Listing: Frankfurt/Main

COMMERZBANK
AKTIENGESellschaft

S. G. WARBURG & CO. LTD.

AMRO INTERNATIONAL LIMITED

CREDIT LYONNAIS

DEUTSCHE BANK
AKTIENGESellschaft

KIDDER, PEABODY INTERNATIONAL
LIMITED

**M. M. WARBURG-BRINCKMANN,
WIRTZ & CO.**

Abu Dhabi Investment Company
Algemene Bank Nederland N.V.
Arab Banking Corporation (ABC)
Julius Baer International Limited
Banca Commerciale Italiana
Banca del Gottardo
Banca della Svizzera Italiana
Banca Nazionale del Lavoro
Banca di Roma
Banca di Roma per la Svizzera S.A.
Banca Urquijo Hispano Americano Limited
BankAmerica Investment Banking Group
Bank für Gemeinwirtschaft
Aktiengesellschaft
Bank Leu International Ltd.
Bank Mees & Hope NV
Bank of New Zealand
Banque Bruxelles Lambert S.A.
Banque Française du Commerce Extérieur
Banque Indosuez
Banque Internationale à Luxembourg S.A.
Banque Nationale de Paris
Banque Paribas
Banque de Paris et des Pays-Bas (Suisse) S.A.
Banque Populaire Suisse S.A. Luxembourg
Banque Privée S.A.
Banque de l'Union Européenne
Barings Brothers & Co., Limited
Bayerische Hypotheken- und Wechsel-Bank
Aktiengesellschaft
Bayerische Landesbank Girozentrale
Bayerische Vereinsbank Aktiengesellschaft
Joh. Berenberg, Gossler & Co.
Berliner Bank Aktiengesellschaft
Berliner Handels- und Frankfurter Bank
Bankhaus Gebrüder Bethmann
Blyth Eastman Paine Webber
International Limited
Caisse des Dépôts et Consignations
Chase Manhattan Capital Markets Group
Chemical Bank International Limited
CIBC Limited
Citicorp Capital Markets Group
Commerzbank International S.A.
Commerzbank (South East Asia) Ltd.
Copenhagen Handelsbank A/S
County Bank Limited
Créditanstalt-Bankverein
Crédit Commercial de France

Crédit Industriel et Commercial
Credito Italiano
Credit Suisse First Boston Limited
Daiwa Europe Limited
Deutsche Bank Aktiengesellschaft
Den Danske Bank af 1871 Aktieselskab
Den norske Creditbank
Deutsche Girozentrale
— Deutsche Kommunalbank —
DG Bank
Deutsche Genossenschaftsbank
Dillon, Read Overseas Corporation
Dominion Securities Aimes Limited
Dresdner Bank Aktiengesellschaft
Effektenbank-Warburg
Aktiengesellschaft
Enskilda Securities
Skanfinska Aktieförbundet
EuroPartners Securities Corporation
European Banking Company
Limited
L'Européenne de Banque
Girozentrale und Bank
der österreichischen Sparkassen
Aktiengesellschaft
Goldman Sachs International Corp.
Groupe des Banquiers Privés
Genevois
Hambros Bank Limited
Hamburgische Landesbank
Girozentrale
Georg Hauck & Sohn Bankiers
Kommanditgesellschaft auf Aktien
Hessische Landesbank — Girozentrale —
Hill Samuel & Co. Limited
Industriebank von Japan (Deutschland)
Aktiengesellschaft
Kansai-Osaka-Frankfurt
Kleinwort, Benson Limited
Kreditbank N.V.
Kreditbank S.A. Luxembourg
Kuwait Foreign Trading Contracting &
Investment Co. (S.A.K.)
Kuwait International Investment Co. s.a.k.
Kuwait Investment Company (S.A.K.)
Landesbank Rheinland-Pfalz
— Girozentrale —
Lazard Frères & Co. Limited
Lazard Frères et Cie

Lehman Brothers Kuhn Loeb
International, Inc.
Lloyds Bank International Limited
ITCB International Limited
Manufacturers Hanover Limited
Metcalf, Finch & Co.
Merrill Lynch Capital Markets
B. Metzger seel. Sohn & Co.
Samuel Montagu & Co. Limited
Morgan Grenfell & Co. Limited
Morgan Guaranty Ltd
Morgan Stanley International
The National Bank of New Zealand Ltd.
Nederlandsche Middenstandsbank N.V.
The Nikko Securities Co., (Europe) Ltd.
Nomura International Limited
Norddeutsche Landesbank
Girozentrale
Sal. Oppenheim jr. & Cie.
Orion Royal Bank Limited
Penson, Halding & Penson N.V.
PK Christiania Bank (UK) Limited
Privatbanken
Renouf International (NZ) Limited
N.M. Rothschild & Sons Limited
Salomon Brothers International Limited
J. Henry Schroder Wagg & Co. Limited
Springsour, Kemp-Gee & Co.
Smith Barney, Harris Upham & Co.
Incorporated
Société Générale
Société Générale de Banque S.A.
Svenska Handelsbanken Group
Swiss Bank Corporation International
Limited
Tinkaus & Barkhardt
Union Bank of Finland Ltd.
Union Bank of Switzerland (Securities)
Limited
Verband Schweizerischer
Kantonalbanken
Verens- und Westbank
Aktiengesellschaft
J. Vondel & Co.
Wardley
Westfälische Landesbank Girozentrale
Westfälische Bank Aktiengesellschaft
Wood Gundy Limited
Yamaichi International (Europe) Limited

All of these Notes having been sold, this announcement appears as a matter of record only.



**BARCLAYS
International**

**BARCLAYS OVERSEAS INVESTMENT
COMPANY B.V.**

(Incorporated with limited liability in the Netherlands)

U.S. \$350,000,000
Guaranteed Floating Rate Notes due 2004

Guaranteed on a subordinated basis by

**BARCLAYS BANK INTERNATIONAL
LIMITED**

(Incorporated with limited liability in England)

Barclays Merchant Bank Limited

Lehman Brothers Kuhn Loeb
International, Inc.

S. G. Warburg & Co. Ltd.

Algemene Bank Nederland N.V.

Banque Bruxelles Lambert S.A.

Banque Internationale à Luxembourg S.A.

Banque Nationale de Paris

Credit Suisse First Boston Limited

Dresdner Bank Aktiengesellschaft

Goldman Sachs International Corp.

Morgan Grenfell & Co. Limited

Salomon Brothers International

Sumitomo Finance International

Swiss Bank Corporation International
Limited

Union Bank of Switzerland (Securities)
Limited

2nd March, 1984

This announcement appears as a matter of record only

RATP**Régie Autonome des Transports Parisiens****ECU 60,000,000 Guaranteed Bonds**

comprising

ECU 40,000,000 10% per cent. Guaranteed Bonds due 1992**ECU 20,000,000 11 per cent. Guaranteed Bonds due 1994**Unconditionally guaranteed by
The Republic of FranceCrédit Lyonnais Banque Bruxelles Lambert S.A.
Crédit Commercial de FranceAlgemene Bank Nederland N.V. Banque Indosuez Banque Internationale à Luxembourg S.A.
Caisse des Dépôts et Consignations Commerzbank Aktiengesellschaft
Crédit Communal de Belgique S.A./Gemeentekrediet van België N.V. Daiwa Europe Limited
Istituto Bancario San Paolo di Torino Kreditbank International Group Merrill Lynch Capital Markets
Nippon European Bank S.A. - LTCB Group Nomura International Limited Société Générale de Banque S.A.

Al Saudi Banque Amro International Limited Banca Commerciale Italiana Banca del Gottardo Banco di Roma Bank/Banque Ipso
Bank für Gemeinwirtschaft Aktiengesellschaft Bank Gutzwiller, Kunz, Bungenier (Overseas) Limited Bank of Tokyo International Limited
Banque du Benelux S.A. Banque Française du Commerce Extérieur Banque Générale du Luxembourg S.A. Banque Nationale de Paris Banque Paribas
Banque Paribas Belgique S.A. Banque Privée de Gestion Financière «B.P.G.F.» Banque de l'Union Européenne Banque Worms
Bayerische Hypothek- und Wechselbank Aktiengesellschaft Bayerische Vereinsbank Aktiengesellschaft Berliner Handels- und Bankbank
Caisse Centrale des Banques de France Caisse d'Epargne de l'Etat Banque de l'Etat, Luxembourg Cera - Centrale Raiffeisen C.V. - Belgium
Chase Manhattan Capital Markets Group Chase Manhattan Limited Citicorp Capital Markets Group C.J. Oyens & Van Eeghen N.V. Compagnie Minière de la Banque
Copenhagen Handelsbank A/S County Bank Limited Creditanstalt-Bankverein Credit European S.A. Luxembourg Credit Général S.A. de Banque
Crédit Industriel d'Alsace et de Lorraine Crédit Industriel et Commercial Crédit du Nord Crédit Italiano Daiichi Kangyo International Limited
Dresdner Bank Aktiengesellschaft Den Danske Bank (Luxembourg) S.A. S.A. de l'Etat, Luxembourg S.A. de l'Etat, Luxembourg S.A. de l'Etat, Luxembourg
Girozentrale und Bank der österreichischen Sparkassen Aktiengesellschaft Enkeltid Securities Scandinavia Enkeltid Limited Hambros Bank Limited Hesse Landesbank - Girozentrale
IBU International Limited Kleinwort, Benson Limited Lazard Frères et Co Lehman Brothers Kuhn Loeb International, Inc. Morgan Guaranty Ltd.
Lloyds Bank International Limited Mitsubishi Finance International Limited Mitsui Finance Europe Limited Morgan Guaranty Ltd.
Morgan Stanley International Norddeutsche Landesbank Girozentrale Nederlandse Credietbank N.V. The Nikko Securities Co. (Europe) Ltd.
Nippon European Bank S.A. - LTCB Group Nippon European Bank S.A. - LTCB Group Nippon European Bank S.A. - LTCB Group Nippon European Bank S.A. - LTCB Group
Salomon Brothers International Sanwa Bank (Underwriters) Limited Société Européenne de Banque S.A. Société Générale
Société Générale Alsacienne de Banque, Luxembourg Société Générale de Banque S.A. Sparebanken Oslo A/S Sparebanken S.A.
Sumitomo Finance International Sumitomo Trust International Limited Svenska Handelsbanken Group Swiss Bank Corporation International Limited
The Taiyo Kobe Bank (Luxembourg) S.A. Union Bank of Finland Ltd. Union Bank of Switzerland (Securities) Limited Union de Banques Arabes et Françaises - U.B.A.F.
S.G. Warburg & Co. Ltd. Westdeutsche Landesbank Girozentrale Wood Gundy Limited Yamachi International (Europe) Limited Yasuda Trust Europe Limited

April 4, 1984

THE ROYAL BANK OF CANADA**NOTICE OF PARTIAL REDEMPTION****TO THE HOLDERS OF 10% DEBENTURES DUE MAY 15, 1994 OF
THE ROYAL BANK OF CANADA**

NOTICE IS HEREBY GIVEN, pursuant to the provisions of the Trust Indenture bearing formal date of April 15th, 1971 (as supplemented) and to the Eighth Supplemental Trust Indenture bearing formal date of May 3rd, 1979 (herein collectively referred to as the "Trust Indenture") between The Royal Bank of Canada (herein referred to as the "Bank") and Montreal Trust Company (herein referred to as the "Trustee"), as Trustee, providing *inter alia* for the creation and issue of 10% Debentures of the Bank, that C\$1,500,000 aggregate principal amount of 10% Debentures due May 15th, 1994 of the Bank in coupon bearer form in the denomination of C\$1,000 each bearing the distinguishing letter "L" and the under-mentioned distinguishing numbers, namely:

22	2200	4440	6427	8242	10211	12477	14395	16361	18388	20354	22316	24286	26256	28226	30196	32166	34136	36106	38076	40046	42016	43986	45956	47926	49896	51866	53836	55806	57776	59746	61716	63686	65656	67626	69596	71566	73536	75506	77476	79446	81416	83386	85356	87326	89296	91266	93236	95206	97176	99146	101116	103086	105056	107026	108996	110966	112936	114906	116876	118846	120816	122786	124756	126726	128696	130666	132636	134606	136576	138546	140516	142486	144456	146426	148396	150366	152336	154306	156276	158246	160216	162186	164156	166126	168096	170066	172036	174006	175976	177946	179916	181886	183856	185826	187796	189766	191736	193706	195676	197646	199616	201586	203556	205526	207496	209466	211436	213406	215376	217346	219316	221286	223256	225226	227196	229166	231136	233106	235076	237046	239016	240986	242956	244926	246896	248866	250836	252806	254776	256746	258716	260686	262656	264626	266596	268566	270536	272506	274476	276446	278416	280386	282356	284326	286296	288266	290236	292206	294176	296146	298116	300086	302056	304026	305996	307966	309936	311906	313876	315846	317816	319786	321756	323726	325696	327666	329636	331606	333576	335546	337516	339486	341456	343426	345396	347366	349336	351306	353276	355246	357216	359186	361156	363126	365096	367066	369036	371006	372976	374946	376916	378886	380856	382826	384796	386766	388736	390706	392676	394646	396616	398586	400556	402526	404496	406466	408436	410406	412376	414346	416316	418286	420256	422226	424196	426166	428136	430106	432076	434046	436016	437986	439956	441926	443896	445866	447836	449806	451776	453746	455716	457686	459656	461626	463596	465566	467536	469506	471476	473446	475416	477386	479356	481326	483296	485266	487236	489206	491176	493146	495116	497086	499056	501026	502996	504966	506936	508906	510876	512846	514816	516786	518756	520726	522696	524666	526636	528606	530576	532546	534516	536486	538456	540426	542396	544366	546336	548306	550276	552246	554216	556186	558156	560126	562096	564066	566036	568006	570000	572000	574000	576000	578000	580000	582000	584000	586000	588000	590000	592000	594000	596000	598000	600000	602000	604000	606000	608000	610000	612000	614000	616000	618000	620000	622000	624000	626000	628000	630000	632000	634000	636000	638000	640000	642000	644000	646000	648000	650000	652000	654000	656000	658000	660000	662000	664000	666000	668000	670000	672000	674000	676000	678000	680000	682000	684000	686000	688000	690000	692000	694000	696000	698000	700000	702000	704000	706000	708000	710000	712000	714000	716000	718000	720000	722000	724000	726000	728000	730000	732000	734000	736000	738000	740000	742000	744000	746000	748000	750000	752000	754000	756000	758000	760000	762000	764000	766000	768000	770000	772000	774000	776000	778000	780000	782000	784000	786000	788000	790000	792000	794000	796000	798000	800000	802000	804000	806000	808000	810000	812000	814000	816000	818000	820000	822000	824000	826000	828000	830000	832000	834000	836000	838000	840000	842000	844000	846000	848000	850000	852000	854000	856000	858000	860000	862000	864000	866000	868000	870000	872000	874000	876000	878000	880000	882000	884000	886000	888000	890000	892000	894000	896000	898000	900000	902000	904000	906000	908000	910000	912000	914000	916000	918000	920000	922000	924000	926000	928000	930000	932000	934000	936000	938000	940000	942000	944000	946000	948000	950000	952000	954000	956000	958000	960000	962000	964000	966000	968000	970000	972000	974000	976000	978000	980000	982000	984000	986000	988000	990000	992000	994000	996000	998000	1000000
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have been selected by lot by the Trustee for redemption on the 15th day of May 1984 for sinking fund purposes only. All such Debentures so selected will be redeemed on May 15th, 1984 in lawful money of Canada at the principal amount thereof upon presentation and surrender of the said Debentures (accompanied by the interest coupons appertaining thereto which mature after May 15th, 1984) at the option of the holder, at any of the following paying agents:

Orion Royal Bank Limited, 1 London Wall, London EC2Y 5JX, which replaces Orion Bank Limited as Principal Paying Agent; **The Royal Bank of Canada**, 1 Place Ville Marie, Montreal H3C 3B5; **The Royal Bank of Canada**, 6 Lombard, London EC2Y 7JY; **The Royal Bank of Canada (France)**, 3, rue de la Harpe, 75009 Paris; **The Royal Bank of Canada A.G.**, Bockenheimer Landstrasse 61, D-6000 Frankfurt (Main) 1, which replaces Burghard and Notenstein Bank A.G.; **Chase Manhattan Bank Luxembourg S.A.**, 47 Boulevard Royal, Luxembourg; **Morgan Guaranty Trust Company of New York**, Avenue des Arts 35, B-1040 Brussels; **Westdeutsche Landesbank Girozentrale**, Friedrichstrasse 56, 4000 Düsseldorf 1.

Debenture Holders should detach the May 15th, 1984 coupon and present it in the usual way.

NOTICE IS ALSO HEREBY GIVEN pursuant to the terms of the Trust Indenture, that all interest on the 10% Debentures so called for redemption shall cease to be payable from and after the said 15th day of May 1984 and coupons for interest to accrue after such date upon said Debentures shall be void.

DATED AT LONDON this 13th day of April, 1984

THE ROYAL BANK OF CANADA,
MONTREAL TRUST COMPANY, TRUSTEE
BY **ORION ROYAL BANK LIMITED.**

ORION ROYAL BANK LIMITED
A member of The Royal Bank of Canada Group

**Who's expanding British Telecom's
packet switching network?****Plessey, naturally.**

Plessey Packet Switching is to be supplied for PSS 'B'—the next phase in the expansion of British Telecom's inland Packet Switch Stream.

That's no surprise, really. Because Plessey supplied the initial PSS exchanges, and is responsible for network development at over fifty locations.

And because Plessey equipment is designed to the international X.25 standard, and continually enhanced to achieve new levels of performance.

Private networks, too, are already taking full advantage of the benefits Plessey Packet Switching gives—

allowing large organisations better use of costly inter-office, national and international links.

Smaller organisations, too, will shortly benefit from a new range of Plessey Packet Switching products.

For faster and more cost-effective data communications, Plessey Packet Switching is proving essential.

Find out more. For a copy of the *Business Guide to Packet Switching* send the coupon, or contact Dr Peter Rawlinson, Plessey Controls Limited, Sopers Lane, Poole, Dorset BH17 7ER.

Telephone: Poole (0202) 675161. Telex: 41272.

To Dr Peter Rawlinson, Plessey Controls Limited, Sopers Lane, Poole, Dorset BH17 7ER. Please send me the *Business Guide to Packet Switching*.

Name _____
Position _____
Company _____
Address _____

Telephone _____

PLESSEY CONTROLS

Plessey and the Plessey logo are registered trademarks of The Plessey Company Ltd.

NEW ISSUE

These Notes having been sold, this announcement appears as a matter of record only.



U.S. \$100,000,000
Republic of Portugal
Floating Rate Notes Due 1992

Merrill Lynch Capital Markets

BankAmerica Investment Banking Group

Barclays Bank Group

Citicorp Capital Markets Group

Daiwa Europe Limited

European Banking Company Limited

IBJ International Limited

Lloyds Bank International Limited

Manufacturers Hanover Limited

Samuel Montagu & Co. Limited

Morgan Guaranty Ltd

Sanwa Bank (Underwriters) Limited

Saudi International Bank

Al-Bank Al-Saudi Al-Ahli Limited

Société Générale de Banque S.A.

Swiss Bank Corporation International Limited

Tokai International Limited

Banque Paribas

Blyth Eastman Paine Webber

International Limited

Crédit Lyonnais

Dresdner (South East Asia) Limited

Fuji International Finance Limited

Kidder, Peabody International Limited

LTCB International Limited

Mitsubishi Finance International Limited

Morgan Grenfell & Co. Limited

The National Bank of Kuwait S.A.K.

Saudi American Bank

Société Générale

Sumitomo Trust International Limited

The Taiyo Kobe Bank (Luxembourg) S.A.

April, 1984

Closing prices April 13

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Closing prices April 13

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Nasdaq national market, closing prices April 13

Nasdaq national market, closing prices April 13 CANADA

Stock	Sales	High	Low	Last	Day	Stock	Sales	High	Low	Last	Day
AFG	18	17	16	16	+	AFG	18	17	16	16	+
AGL	18	17	16	16	+	AGL	18	17	16	16	+
AGS	18	17	16	16	+	AGS	18	17	16	16	+
AGT	18	17	16	16	+	AGT	18	17	16	16	+
AGU	18	17	16	16	+	AGU	18	17	16	16	+
AGV	18	17	16	16	+	AGV	18	17	16	16	+
AGW	18	17	16	16	+	AGW	18	17	16	16	+
AGX	18	17	16	16	+	AGX	18	17	16	16	+
AGY	18	17	16	16	+	AGY	18	17	16	16	+
AGZ	18	17	16	16	+	AGZ	18	17	16	16	+
AGAA	18	17	16	16	+	AGAA	18	17	16	16	+
AGAB	18	17	16	16	+	AGAB	18	17	16	16	+
AGAC	18	17	16	16	+	AGAC	18	17	16	16	+
AGAD	18	17	16	16	+	AGAD	18	17	16	16	+
AGAE	18	17	16	16	+	AGAE	18	17	16	16	+
AGAF	18	17	16	16	+	AGAF	18	17	16	16	+
AGAG	18	17	16	16	+	AGAG	18	17	16	16	+
AGAH	18	17	16	16	+	AGAH	18	17	16	16	+
AGAI	18	17	16	16	+	AGAI	18	17	16	16	+
AGAJ	18	17	16	16	+	AGAJ	18	17	16	16	+
AGAK	18	17	16	16	+	AGAK	18	17	16	16	+
AGAL	18	17	16	16	+	AGAL	18	17	16	16	+
AGAM	18	17	16	16	+	AGAM	18	17	16	16	+
AGAN	18	17	16	16	+	AGAN	18	17	16	16	+
AGAO	18	17	16	16	+	AGAO	18	17	16	16	+
AGAP	18	17	16	16	+	AGAP	18	17	16	16	+
AGAQ	18	17	16	16	+	AGAQ	18	17	16	16	+
AGAR	18	17	16	16	+	AGAR	18	17	16	16	+
AGAS	18	17	16	16	+	AGAS	18	17	16	16	+
AGAT	18	17	16	16	+	AGAT	18	17	16	16	+
AGAU	18	17	16	16	+	AGAU	18	17	16	16	+
AGAV	18	17	16	16	+	AGAV	18	17	16	16	+
AGAW	18	17	16	16	+	AGAW	18	17	16	16	+
AGAX	18	17	16	16	+	AGAX	18	17	16	16	+
AGAY	18	17	16	16	+	AGAY	18	17	16	16	+
AGAZ	18	17	16	16	+	AGAZ	18	17	16	16	+
AGAA	18	17	16	16	+	AGAA	18	17	16	16	+
AGAB	18	17	16	16	+	AGAB	18	17	16	16	+
AGAC	18	17	16	16	+	AGAC	18	17	16	16	+
AGAD	18	17	16	16	+	AGAD	18	17	16	16	+
AGAE	18	17	16	16	+	AGAE	18	17	16	16	+
AGAF	18	17	16	16	+	AGAF	18	17	16	16	+
AGAG	18	17	16	16	+	AGAG	18	17	16	16	+
AGAH	18	17	16	16	+	AGAH	18	17	16	16	+
AGAI	18	17	16	16	+	AGAI	18	17	16	16	+
AGAJ	18	17	16	16	+	AGAJ	18	17	16	16	+
AGAK	18	17	16	16	+	AGAK	18	17	16	16	+
AGAL	18	17	16	16	+	AGAL	18	17	16	16	+
AGAM	18	17	16	16	+	AGAM	18	17	16	16	+
AGAN	18	17	16	16	+	AGAN	18	17	16	16	+
AGAO	18	17	16	16	+	AGAO	18	17	16	16	+
AGAP	18	17	16	16	+	AGAP	18	17	16	16	+
AGAQ	18	17	16	16	+	AGAQ	18	17	16	16	+
AGAR	18	17	16	16	+	AGAR	18	17	16	16	+
AGAS	18	17	16	16	+	AGAS	18	17	16	16	+
AGAT	18	17	16	16	+	AGAT	18	17	16	16	+
AGAU	18	17	16	16	+	AGAU	18	17	16	16	+
AGAV	18	17	16	16	+	AGAV	18	17	16	16	+
AGAW	18	17	16	16	+	AGAW	18	17	16	16	+
AGAX	18	17	16	16	+	AGAX	18	17	16	16	+
AGAY	18	17	16	16	+	AGAY	18	17	16	16	+
AGAZ	18	17	16	16	+	AGAZ	18	17	16	16	+
AGAA	18	17	16	16	+	AGAA	18	17	16	16	+
AGAB	18	17	16	16	+	AGAB	18	17	16	16	+
AGAC	18	17	16	16	+	AGAC	18	17	16	16	+
AGAD	18	17	16	16	+	AGAD	18	17	16	16	+
AGAE	18	17	16	16	+	AGAE	18	17	16	16	+
AGAF	18	17	16	16	+	AGAF	18	17	16	16	+
AGAG	18	17	16	16	+	AGAG	18	17	16	16	+
AGAH	18	17	16	16	+	AGAH	18	17	16	16	+
AGAI	18	17	16	16	+	AGAI	18	17	16	16	+
AGAJ	18	17	16	16	+	AGAJ	18	17	16	16	+
AGAK	18	17	16	16	+	AGAK	18	17	16	16	+
AGAL	18	17	16	16	+	AGAL	18	17	16	16	+
AGAM	18	17	16	16	+	AGAM	18	17	16	16	+
AGAN	18	17	16	16	+	AGAN	18	17	16	16	+
AGAO	18	17	16	16	+	AGAO	18	17	16	16	+
AGAP	18	17	16	16	+	AGAP	18	17	16	16	+
AGAQ	18	17	16	16	+	AGAQ	18	17	16	16	+
AGAR	18	17	16	16	+	AGAR	18	17	16	16	+
AGAS	18	17	16	16	+	AGAS	18	17	16	16	+
AGAT	18	17	16	16	+	AGAT	18	17	16	16	+
AGAU	18	17	16	16	+	AGAU	18	17	16	16	+
AGAV	18	17	16	16	+	AGAV	18	17	16	16	+
AGAW	18	17	16	16	+	AGAW	18	17	16	16	+
AGAX	18	17	16	16	+	AGAX	18	17	16	16	+
AGAY	18	17	16	16	+	AGAY	18	17	16	16	+
AGAZ	18	17	16	16	+	AGAZ	18	17	16	16	+
AGAA	18	17	16	16	+	AGAA	18	17	16	16	+
AGAB	18	17	16	16	+	AGAB	18	17	16	16	+
AGAC	18	17	16	16	+	AGAC	18	17	16	16	+
AGAD	18	17	16	16	+	AGAD	18	17	16	16	+
AGAE	18	17	16	16	+	AGAE	18	17	16	16	+
AGAF	18	17	16	16	+	AGAF	18	17	16	16	+
AGAG	18	17	16	16	+	AGAG	18	17	16	16	+
AGAH	18	17	16	16	+	AGAH	18	17	16	16	+
AGAI	18	17	16	16	+	AGAI	18	17	16	16	+
AGAJ	18	17	16	16	+	AGAJ	18	17	16	16	+
AGAK	18	17	16	16	+	AGAK	18	17	16	16	+
AGAL	18	17	16	16	+	AGAL	18	17	16	16	+
AGAM	18	17	16	16	+	AGAM	18	17	16	16	+
AGAN	18	17	16	16	+	AGAN	18	17	16	16	+
AGAO	18	17	16	16	+	AGAO	18	17	16	16	+
AGAP	18	17	16	16	+	AGAP	18	17	16	16	+
AGAQ	18	17	16	16	+	AGAQ	18	17	16	16	+
AGAR	18	17	16	16	+	AGAR	18	17	16	16	+
AGAS	18	17	16	16	+	AGAS	18	17	16	16	+
AGAT	18	17	16	16	+	AGAT	18	17	16	16	+
AGAU	18	17	16	16	+	AGAU	18	17	16	16	+
AGAV	18	17	16	16	+	AGAV	18	17	16	16	+
AGAW	18	17	16	16	+	AGAW	18	17	16	16	+
AGAX	18	17	16	16	+	AGAX	18	17	16	16	+
AGAY	18	17	16	16	+	AGAY	18	17	16	16	+
AGAZ	18	17	16	16	+	AGAZ	18	17	16	16	+
AGAA	18	17	16	16	+	AGAA	18	17	16	16	+
AGAB	18	17	16	16	+	AGAB	18	17	16	16	+
AGAC	18	17	16	16	+	AGAC	18	17	16	16	+
AGAD	18	17	16	16	+	AGAD	18	17	16	16	+
AGAE	18	17	16	16	+	AGAE	18	17	16	16	+
AGAF	18	17	16	16	+	AGAF	18	17	16	16	+
AGAG	18	17	16	16	+	AGAG	18	17	16	16	+
AGAH	18	17	16	16	+	AGAH	18	17	16	16	+
AGAI	18	17	16	16	+	AGAI	18	17	16	16	+
AGAJ	18	17	16	16	+	AGAJ	18	17	16	16	+
AGAK	18	17	16	16	+	AGAK	18	17	16	16	+
AGAL	18	17	16	16	+	AGAL	18	17	16	16	+
AGAM	18	17	16	16	+	AGAM	18	17	16	16	+
AGAN	18	17	16	16	+	AGAN	18	17	16	16	+
AGAO	18	17	16	16	+	AGAO	18	17	16	16	+
AGAP	18	17	16	16	+	AGAP	18	17	16	16	+
AGAQ	18	17	16	16	+	AGAQ	18	17	16	16	+
AGAR	18	17	16	16	+	AGAR	18	17	16	16	+
AGAS	18	17	16	16	+	AGAS	18	17	16	16	+
AGAT	18	17	16	16	+	AGAT	18	17	16	16	+
AGAU	18	17	16	16	+	AGAU	18	17	16	16	+
AGAV	18	17	16	16	+	AGAV	18	17	16	16	+
AGAW	18	17	16	16	+	AGAW	18	17	16	16	+
AGAX	18	17	16	16	+	AGAX	18	17	16	16	+
AGAY	18	17	16	16	+	AGAY	18	17	16	16	+
AGAZ	18	17	16	16	+	AGAZ	18	17	16	16	+
AGAA	18	17	16	16	+	AGAA	18	17	16	16	+
AGAB	18	17	16	16	+	AGAB	18	17	16	16	+
AGAC	18	17	16	16	+	AGAC	18	17	16	16	+
AGAD	18	17	16	16	+	AGAD	18	17	16	16	+
AGAE	18	17	16	16	+	AGAE	18	17	16	16	+
AGAF	18	17	16	16	+	AGAF	18	1			

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NOTES: Prices on this page are as quoted on the individual exchanges and are last traded prices. * Dealings 10000. ** Ex dividend. ** Ex scrip

July 15

This document includes particulars given in compliance with the Regulations of the Council of The Stock Exchange for the purpose of giving information with regard to the Company. The Directors have taken all reasonable care to ensure that the facts stated herein are true and accurate in all material respects and that there are no other material facts the omission of which would make misleading any statement herein whether of fact or of opinion. All the Directors accept responsibility accordingly. Application has been made to the Council of The Stock Exchange for the Shares of each class of the Company available to be allotted to be admitted to the Official List. Copies of this Prospectus and of the documents specified herein have been delivered for registration to the Registrar of Companies in England.

Old Court Currency Fund Limited

A company registered with limited liability in the Cayman Islands on 22nd March, 1984 under the provisions of the Companies Law Cap. 22 of the Cayman Islands as amended and having an authorised share capital of U.S.\$500,100

The Company's Manager is N. M. Rothschild Asset Management (C.I.) Limited (the "Manager"),
a wholly owned subsidiary of

N. M. Rothschild & Sons Limited

Initial Offer for Subscription
of up to 50,000,000 Participating Redeemable Preference Shares of
U.S. 1 cent each ("Shares") of the following classes and at the following prices
payable in full on application.

Classes of Shares and price per Share

Australian Dollar Shares	A.515	Japanese Yen Shares	¥ 3,500
Belgian Franc Shares (Financial)	Fin. B.Fr. 800	Singapore Dollar Shares	S.\$30
Canadian Dollar Shares	Can. \$20	Sterling Shares	£10
Danish Krone Shares	D.Kr. 150	Swiss Franc Shares	Sw.Fr. 30
Deutschmark Shares	DM.40	United States Dollar Shares	U.S.\$15
Dutch Guilder Shares	Fls. 50		
French Franc Shares	F.Fr. 100		
Hong Kong Dollar Shares	H.K.\$100		
Italian Lira Shares	Lit. 25,000		

The distribution of this Prospectus and the offering of Shares may be restricted in certain jurisdictions; persons into whose possession this Prospectus comes are required by Old Court Currency Fund Limited (the "Company") and N. M. Rothschild Asset Management (C.I.) Limited (the "Manager") to inform themselves of and to observe any such restrictions. This Prospectus does not constitute an offer or solicitation by anyone in any jurisdiction in which such offer is not authorised or to any person to whom it is unlawful to make such offer or solicitation. In particular, this Prospectus does not constitute and shall not be construed as an invitation to the public of the Cayman Islands to subscribe for Shares.

No person has been authorised to give any information or to make any representations, other than those contained in this Prospectus, in connection with the offering of Shares and, if given or made, such information or representations must not be relied on as having been authorised by the Company or by the Manager. Neither the delivery of this Prospectus nor the allotment or issue of Shares shall, under any circumstances, create any implication that there has been no change in the affairs of the Company since the date hereof.

The content of the Advisory and Finance Committee of the States of Guernsey under The Control of Borrowing (Bailiwick of Guernsey) Ordinance 1959 to 1976 has been obtained for the issue of up to 50,000,000 Unclassified Shares of U.S. 1 cent each either as Nominal Shares or as Shares in the Company. It must be distinctly understood that in giving this consent the Committee takes no responsibility for the financial soundness of any schemes or for the correctness of any of the statements made or opinions expressed with regard to them.

Shares may not be acquired or held beneficially by any person resident for tax purposes in Guernsey, Alderney or Herm.

The Shares have not been registered under the United States Securities Act of 1933 and, except in a transaction which does not violate such Act, may not be directly or indirectly offered or sold in the United States of America (including its territories, possessions and areas subject to its jurisdiction) or to or for the benefit of a United States person. For this purpose, United States person includes a national or resident of the United States of America, a partnership organized or existing in any state, territory or possession of the United States of America, a corporation organized under the laws of the United States of America or of any state, territory or possession thereof, or any estate or trust, other than an estate or trust the income of which from sources outside the United States of America is not effectively connected with the conduct of trade or business within the United States of America (which is not included in gross income for purposes of computing United States federal income tax). The attention of United States persons is drawn to the paragraph headed "Restrictions on Holdings" set out below and the compulsory redemption powers of the Company mentioned therein.

This Prospectus does not constitute an offer of Shares for subscription at any time after 30th April, 1984.

Copies of this Prospectus, subsequent Prospectuses and Application Forms may be obtained from the Company, c/o N. M. Rothschild Asset Management (C.I.) Limited, P.O. Box 242, St. Julian's Court, St. Peter Port, Guernsey, Channel Islands. Telephone: (0481) 26741 & 26331. Fax: 4191673 & 4191507.

DIRECTORS
Leopold de Rothschild (Chairman),
New Court, St. Swithin's Lane, London EC4P 4DU, Executive
Director of N. M. Rothschild & Sons Limited, London.

Trevor Ash,
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands,
and a Director of N. M. Rothschild Asset Management (C.I.) Limited,
Guernsey, Channel Islands.

Gram Barker,
New Court, St. Swithin's Lane, London EC4P 4DU, Executive
Director of N. M. Rothschild & Sons Limited, London and a Director
of N. M. Rothschild Asset Management (C.I.) Limited,
Guernsey, Channel Islands.

Henry Broughton,
Ingleside, Croule Hill, St. Peter Port, Guernsey,
Channel Islands. Former Chairman of The Investment Trust of
Guernsey Limited and former Senior Partner of Black, Geoghegan & Tili,
Chartered Accountants.

Alan Graham,
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands,
Assistant Director of N. M. Rothschild & Sons Limited, London and
Executive Director of N. M. Rothschild & Sons (C.I.) Limited,
Guernsey, Channel Islands.

Richard Katz,
New Court, St. Swithin's Lane, London EC4P 4DU, Executive
Director of N. M. Rothschild & Sons Limited, London.

Percy Ozzane,
The Emeralds, Longue Rue, Vale, Guernsey, Channel Islands,
Advocate of the Royal Court of Guernsey, and a Consultant to and
former Senior Partner of Ozzane, van Leuven & Perrot, Advocates.

Charles Tracy,
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands,
Managing Director of N. M. Rothschild & Sons (C.I.) Limited and a
Director of N. M. Rothschild Asset Management (C.I.) Limited,
Guernsey, Channel Islands.

John Vine,
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands,
Vice-Chairman of N. M. Rothschild & Sons (C.I.) Limited and a
Director of N. M. Rothschild Asset Management (C.I.) Limited,
Guernsey, Channel Islands.

REGISTERED OFFICE

P.O. Box 309, Grand Cayman, British West Indies.

MANAGER, REGISTRAR & SECRETARY
N. M. Rothschild Asset Management (C.I.) Limited,
P.O. Box 242, St. Julian's Court, St. Peter Port, Guernsey,
Channel Islands.
Telephone: (0481) 26741 & 26331
Telex: 4191673 & 4191507

BANKERS & CUSTODIAN
N. M. Rothschild & Sons (C.I.) Limited,
P.O. Box 58, St. Julian's Court, St. Peter Port, Guernsey,
Channel Islands.

AUDITORS
Peat, Marwick, Mitchell & Co., Chartered Accountants,
10 Leifevre Street, St. Peter Port, Guernsey,
Channel Islands.

STOCKBROKERS
de Zoete & Bevan,
25 Finsbury
cus, London EC2M 7EE, England.

LEGAL ADVISERS TO THE COMPANY
In the Cayman Islands: Maples & Calder, Attorneys-at-Law,
P.O. Box 308, Grand Cayman, British West Indies.

In England: Linklaters & Paines,
Barrington House, 59-67 Gresham Street,
London EC2V 7JA, England.

In Guernsey: Ozzane, van Leuven & Perrot,
P.O. Box 186, 1 Le Marchant Street, St. Peter Port, Guernsey,
Channel Islands.

LEGAL ADVISERS TO THE MANAGER
Ashurst, Morris, Crisp & Co.,
Broadgate House, 7 Eldon Street, London EC2M 7HD, England.

FINANCIAL OPERATIONS

ALLOTMENT OF SHARES

The initial subscription lists will open at 9.00 a.m. in Guernsey on 30th April, 1984 and will close at 10.00 a.m. on that day. Settlement will be due on or before 2nd May, 1984, and provided that settlement has been effected, allotments will be made on that day.

After the initial offer, application for Shares of each class may be made on any Dealing Day.

Application may be made either by telefax or on the application form at the end of this Prospectus. Payment may be made in any of the currencies (except Japanese Yen) listed below. Full details of the application and payment procedure are set out below. Shares will be issued in registered form.

INVESTMENT POLICY

The Company's investments ("Investments") in each Currency Fund will consist principally of deposits. In certain circumstances these may be supplemented by bonds, notes and money-market instruments if a more attractive return is available from these investments. No investments will be made which mature in more than twelve months. The normal policy will be to hold most investments until maturity.

A minimum of 20 per cent. of the value of the Investments in each Currency Fund will normally be available at seven days' notice or less (except to the extent that this percentage is reduced by redemptions and conversions, when the intention will be to reinstate the liquidity margin as soon as circumstances permit). This policy is intended to provide sufficient funds to enable redemptions and conversions to be effected without the premature realisation of Investments.

A conservative credit assessment policy will be pursued. Specific limits will be established for each bank and institution with which the Company invests. Such limits are designed to ensure that there is a prudent spread of risk in each Currency Fund, except that this policy will not require the Company to make any investment which is less than the equivalent of U.S.\$30.5m. Investments will only be made with banks and institutions of the highest standing.

For each Currency Fund the Company will make Investments payable in the currency in which the Shares of that class are designated. However, in any Currency Fund the Company may purchase Investments payable in another currency provided that a forward currency sale of the principal amount of the investment, plus the expected interest to maturity, is undertaken. In this way the Company may take advantage of opportunities to maximise the return for a particular currency while pursuing the principle that there should be no currency risk within each Currency Fund.

DIVIDEND POLICY

It is intended that the whole of the net income of the Company, after deduction of expenses, attributable to each class of Shares will be distributed.

Distributions will be made by way of half-yearly dividends payable on 30th June and 31st December in each year, commencing on 31st December, 1984. Shareholders may elect to receive their dividends in any of the currencies listed below.

Shareholders may also elect to have their dividends automatically reinvested in further Shares on the Dealing Day next following the date on which the relevant dividend will be payable by completing the appropriate section on the Application Form. Shares allotted on account of the reinvestment of dividends will be registered in the name of the Shareholder and a Share Certificate for such new Shares will be sent to the Shareholder at his risk normally within two weeks of the appropriate Dealing Day.

THE MANAGER

N. M. Rothschild Asset Management (C.I.) Limited has been appointed to manage the Investments of each Currency Fund, to undertake the Company's administration and to act as Registrar and Secretary under a Management Agreement, particulars of which are set out below.

N. M. Rothschild Asset Management (C.I.) Limited, which is a wholly-owned subsidiary of N. M. Rothschild & Sons Limited, London, acts as the manager of substantial unit trusts and other similar funds in Guernsey.

CURRENCY FUNDS

The assets and liabilities and income and expenditure allocated to each class of Share will be applied to the Currency Fund relating to that particular class of Share. The Manager will normally allocate the liabilities of the Company to the Currency Fund to which they relate or, if they do not relate to any particular Currency Fund, between all the Currency Funds pro rata to their net asset value. However, there may be exceptional circumstances in which the Manager with the approval of the Auditors will be obliged to allocate them in a different way - for example if the assets of a particular Currency Fund are inadequate to meet its liabilities. Certain powers are also given to the Liquidator in this regard in the event of the Company being wound up.

PRICES, SETTLEMENT AND VALUATIONS

After the initial offer, the prices at which Shares of each class will be provisionally allotted and redeemed will be calculated on each Dealing Day. The day on which settlement is due ("Settlement Day") will normally be two business days after the relevant Dealing Day. The prices on each Dealing Day will be calculated by reference to the projected value of the net assets of the relevant Currency Fund as at the Settlement Day on the basis of information available on the Dealing Day. There will normally be a single price for the allotment and redemption of Shares of each class.

As the normal policy will be to hold most Investments until maturity, the Investments comprised within each Currency Fund will be valued on a straight time basis, i.e. the total return achieved by holding each Investment to maturity will be calculated and the appropriate portion will be added to its value day by day.

However, the Manager in its discretion, subject to the approval of the Auditors, reserves the right to value the Investments of any Currency Fund on a different basis, should this be considered more equitable. For example, in the event of a major change in interest rates or in the value of a likely capital loss, the valuation basis of the Investments might be adjusted to reflect their market values. The full valuation provisions are contained in the Company's Articles of Association which are available for public inspection and copies of which are available on request.

In the event of the relevant foreign exchange or banking markets being closed, the Settlement Day and the issue and redemption prices for Shares where payment is to be tendered in a currency other than that in which the Shares are designated, will differ from those applicable where payment is to be made in the same currency.

Further information on pricing is contained in section 1 of General Information set out below.

JAPANESE YEN CLASS OF SHARES

In order to comply with Japanese Ministry of Finance requirements the subscription and redemption monies of the Japanese Yen Class of Shares cannot be paid in yen but must be paid in any of the currencies listed below chosen by the investor. The Investments held in the Japanese Yen Currency Fund will, however, at all times be maintained in or by reference to yen.

CHARGES AND FEES

There is no charge for buying, selling or converting Shares. The Manager will receive for its services out of the respective Currency Funds an aggregate monthly fee of 4 per cent. of the value of the net assets of each Currency Fund as ascertained for calculating Share prices. This fee cannot be increased without the agreement of Shareholders in General Meeting. The Manager's out of pocket expenses in relation to its services to the Company will also be borne out of the Currency Funds.

PRINCIPAL FEATURES

STRUCTURE

Old Court Currency Fund Limited is an open-ended investment company registered in the Cayman Islands and managed in Guernsey.

OBJECTIVE

The Company's objective is to provide a wholesale rate of return for liquid funds in a currency chosen by the investor with the opportunity to convert at any time between currencies at inter-bank rates of foreign exchange.

CLASSES OF SHARES AND CURRENCIES

There are fourteen different classes of Shares: one for each of the fourteen currencies listed below under "Correspondent Banks". A separate fund ("Currency Fund") will be maintained for each class of Shares. Each Currency Fund will have a portfolio of assets related to its respective currency. Thus there will be no currency risk within each Currency Fund; however, on investing in a currency other than the Shareholder's own currency, the investment will be subject to the movement of foreign exchange rates.

INVESTMENT POLICY

Within a conservative approach to credit assessment, the Company's policy will be to invest in deposits maturing in not more than twelve months.

ALLOTMENT AND REDEMPTION OF SHARES

Shares may be applied for on any business day in Guernsey ("Dealing Day") and may be redeemed on any Dealing Day subject to seven days' notice. Settlement will take place in accordance with euromarket practice, which is normally two business days later.

CONVERSION OF SHARES

Shareholders can elect to convert from one class to another. Usually this can be done immediately by a telephone call to the Manager in Guernsey who can quote the rates for conversion.

SHARE PRICES AND VALUATIONS

There will be a single price for the allotment and redemption of Shares of each class which is calculated by reference to the value of the net assets of the relative Currency Fund.

INCOME

The income accruing to each class of Share will be paid as a dividend on 30th June and 31st December in each year, commencing on 31st December, 1984. Shareholders may elect to have their dividends automatically reinvested in further Shares.

CHARGES

There is no initial sales charge. The Manager will charge a fee of 4 per cent. per month on the net asset value of the Company.

TAXATION

It is the aim of the Company not to incur any tax on its income. It is expected that the Company will qualify as a "distributor" in respect of the new regulations being introduced by the United Kingdom Inland Revenue, in which case UK investors will normally have their gains on disposal arising from their own currency transactions taxed as capital gains. Their income will be taxed as such.

CURRENCY ADVICE AND MANAGEMENT

Arrangements can be made for the provision of a discretionary currency selection service based on investment in the Company's Shares for investors with a minimum of £100,000. Further information can be obtained from the Manager.

SAVINGS PLAN

A Savings Plan will be operated for investors who would like to make regular investments in the Company.

REDEMPTION OF SHARES

Shares of each class may be redeemed on any Dealing Day by giving not less than seven days' notice by telefax or in writing specifying the number and class of Shares to be redeemed and giving payment instructions for the redemption proceeds. Notice received on any day which is not a business day in Guernsey, will be deemed to have been received on the next business day. Payment of the redemption proceeds may be made in any of the currencies (except Japanese Yen) listed below, either by transfer to the Shareholder's bank account or by cheque posted to the Shareholder at his registered address. The Share Certificate (with the redemption request on the reverse duly completed) must be received by the Company in Guernsey by the Dealing Day prior to the relevant Dealing Day.

The price at which Shares are redeemed will be the price calculated for the Dealing Day except as detailed in the fifth paragraph of section 1 of General Information set out below. Payment instructions for the redemption proceeds to be paid on the Settlement Day will be given by the Company to its bankers in Guernsey or the appropriate cheque will be posted to the Shareholder at his risk. If the Share Certificate is not received before the intended Dealing Day, the Shares will not be redeemed until it is so received in which event the redemption price will be the price ruling for the first Dealing Day after it has been received and settlement will take place accordingly.

All Shares of each class not previously redeemed will be redeemed by the Company on 31st December, 1984 or, if that is not a Dealing Day, on the next following Dealing Day, at the respective redemption prices on such day for settlement on the relative Settlement Day.

CONVERSION BETWEEN CLASSES OF SHARES

Shareholders may convert all or part of their holdings of any one class of Shares into Shares of another class or classes by giving notice of their requirements on any Dealing Day. The Company will endeavour to make the necessary arrangements for the foreign exchange transaction in respect of a conversion as soon as practicable after receipt of the notice. The conversion of one class of Share into another will actually take place on a subsequent Dealing Day. The old Share Certificate should also be returned to the Company with the conversion request on the reverse duly completed.

Conversion will take place at a rate calculated by reference to the values of the Shares of the classes concerned in accordance with the formula set out below. No charges will be levied by the Company on the conversion.

The new Share Certificate will not be posted to the Shareholder until the old Share Certificate, with the conversion request duly completed, has been received by the Company, but the conversion will not be delayed as a result.

The right to convert is dependent on the Company having sufficient available share capital to implement the conversion. The Manager will endeavour to procure that the available capital is at a level where this will normally be possible.

Further information is contained in section 2 of General Information set out below.

CERTIFICATES

Certificates representing the Shares issued will normally be despatched within two weeks of the appropriate Settlement Day at the risk of the persons entitled thereto.

CUSTODIAN SERVICES

Arrangements have been made for N. M. Rothschild & Sons (C.I.) Limited to act as Custodian for investors who find the delivery of Share Certificates to and from Guernsey inconvenient. Shares can be registered in the name of Old Court Limited (N.M. Rothschild & Sons (C.I.) Limited's nominee company) and held by that Company for the account of the beneficial owner. The fees for this service are £25 per customer per annum plus 25 for each application or redemption and £10 for each conversion. Investors who are interested in this service should tick the appropriate box on the Application Form.

SAVINGS PLAN

A Savings Plan will be available to provide a convenient method of making regular investments in the Company by banker's standing order. Investors will be able to choose the frequency of investment subject to a minimum of £500 (or its foreign currency equivalent) per payment. Investors who are interested in this service should tick the appropriate box on the Application Form.

PUBLICATION OF PRICES

Prices of Shares of each class will be published daily in the Financial Times and will also be available from the Manager. The prices published will be those applicable to the currency in which the Shares are designated.

FOREIGN EXCHANGE TRANSACTIONS

Where payments in respect of allotments or redemptions of Shares are to be tendered in a currency other than that in which the Shares concerned are designated, the necessary foreign exchange transactions will be arranged by the Company, normally with N. M. Rothschild & Sons (C.I.) Limited, on behalf of and for the account of the Applicant or Shareholder without responsibility as respects the Company.

COMMISSIONS

The Manager may at its discretion pay commission to investors' agents, without recourse to the Company. Such commissions will be calculated at 4 per cent. per month of the month-end value of the Shares subscribed through the agent in question. Commission will be paid in one of the currencies listed below chosen by the agent concerned.

TAXATION - (a) THE COMPANY

The Company is registered in the Cayman Islands and has applied for, and can be expected to obtain, an undertaking from the Cayman Islands authorities that, for a period of twenty years, no law which is enacted in the Cayman Islands imposing any tax to be levied on profits, income, gains or appreciations shall apply to the Company.

Registration and stamp duty fees in the Cayman Islands on the registration of the Company amounted to the equivalent of U.S.\$1,576. The annual filing fee payable each year by the Company in the Cayman Islands is currently the equivalent of U.S.\$579.

It is the intention of the Directors that the control and management of the Company will be exercised, so far as practicable, in such a way that it will not be resident in the United Kingdom. In any event it is expected that the Company would not be deemed to be a close company if it were so resident.

It is not expected that the Company will incur any tax or be liable to pay any statutory fees in Guernsey other than a nominal event.

Having regard to the manner in which it conducts its operations, the Directors consider that the Company should not, in normal circumstances, incur any taxes in the countries in whose currencies the different classes of Shares are designated.

TAXATION - (b) SHAREHOLDERS

Shareholders will not be subject to any tax in the Cayman Islands or Guernsey in respect of any Shares owned by them.

Clearance has been obtained from the Board of Inland Revenue of the United Kingdom ("the Revenue") under Section 464 of the Income and Corporation Taxes Act 1970 that the provisions of Section 460 of that Act (cancellation of tax advantages from certain transactions in securities) will not apply.

For United Kingdom tax purposes it is expected that the Company will fall within the definition of an "offshore company" for the purposes of certain legislation proposed to be enacted in 1984. If the Company does not distribute its income in full, this would cause United Kingdom taxpayers to suffer tax on gains arising upon disposal at the rates applicable to income. Since the Company proposes to distribute its income in full and to comply with the other requirements in order to obtain "distributor" status under the proposed legislation, the Directors expect that gains arising on disposals of Shares will continue to be subject to tax under the capital gains tax regime. Details of the proposed method of operation of the Company have been submitted to the Revenue. On the information supplied, including the assurance that all income of the Company will be properly distributed, and subject to the legislation being enacted in the form presently envisaged the Revenue confirmed on 15th March, 1984 that they saw no reason in principle why the Company should have difficulty in obtaining "distributor" status.

The Revenue has also stated that, each time a Shareholder redeems or converts his holding from one class of Shares to another, the element in the value of his holding on the redemption or conversion which represents monies accrued since the last distribution date (or since acquisition, if later) will be taxed as income.

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1. the Memorandum and Articles of Association of the Company;
2. the Material Contracts described above;
3. the report and consent of Pearl, Marwick, Mitchell & Co. referred to above; and
4. the Companies Law Cap. 22 of the Cayman Islands as amended, under which the Company was registered.

CORRESPONDENT BANKS
The Correspondent Banks of N. M. Rothschild & Sons (C.I.) Limited for receipt or payment of subscription and redemption moneys are:-

The Correspondent Banks of N. M. Rothschild & Sons (C.L.) Limited for receipt or payment of subscription and redemption moneys are:—

included in gross income for the purposes of computing United States federal income tax. For the purposes of this definition, "United States of America" includes the United States of America, its territories, possessions and areas subject to its jurisdiction.

ملک میں

London and Manchester Group plc

Extracts from the statement by the Chairman, Mr H. I. K. Browne, F.C.A., on the Group Report and Accounts for 1983

1983 was a year of significant progress for the Group. New business increased at a rate greater than that experienced for some years and plans for the development of the Group's structure and the rationalisation of the senior executive functions were implemented. I am therefore able to sound a note of optimism for the future in spite of Budget changes to which I refer later in my statement, although it has to be recognised that the Group's recent achievements could be largely negated if there were a return to the high rates of inflation and financial instability which have marked much of the last decade.

On behalf of your Board I would like to express appreciation of the hard work and dedication of management and staff which has so effectively contributed to the Group's recent progress.

Board
In July 1983 I was very pleased to welcome Mr. Hugh Jenkins and Mr. Jeremy Leigh Pemberton as non-executive directors. With their appointment I feel that the Group has gained invaluable experience. Mr. Jenkins being the senior investment executive of one of the country's leading pension funds and Mr. Leigh Pemberton having an outstanding record in a high quality manufacturing company of international status.

Profit and Loss Account and Dividend
Income has been received by transfers of £3,266,000 from the life funds of London and Manchester Assurance and £950,000 from the investment trust retirement annuity fund. In addition investment income increased from £1,056,000 to £1,157,000.

After setting off the general branch loss of £245,000 and the expenses of management and taxation there remains a balance of £4,683,000 which has enabled your Board to recommend a final dividend of 11.48p per share (1982 9.31p). This, together with the interim dividend of 4.97p per share paid in November 1983, makes a total of 16.45p per share (1982 13.55p). After providing for these dividends the balance carried forward has been increased by £911,000.

The Insurance Market
An important feature in the insurance market in 1983 was the introduction of a new system for tax relief on mortgage interest (MIRAS) which enhanced the attraction of life policies as a means of repayment. The new business figures for the industry as a whole benefited from this change and I am pleased to say that the performance of both the home service and life broker divisions in this respect compares well with that of the Group's competitors.

Shareholders will be aware of the proposals to regulate commission payments under the Registry of life assurance commissions (ROLAC). Whilst your Board believes in a responsible approach to the levels of commissions paid to intermediaries, it takes the view that such commissions are only part of the total acquisition costs and that therefore a life office should either be free to pay commissions having regard to the volumes of business and the service given by intermediaries, or that total acquisition costs should be controlled.

Home Service Division
The home service division remains the major profit centre within the Group. The industrial branch sector has made progress both in the growth of new business and in the control of the quality of that business. The result has been an overall increase in premium income well in excess of the current rate of inflation. The ordinary branch experienced a quite outstanding year, largely as a result of MIRAS.

Life Broker Division
Both annual and single premium business showed strong growth in 1983 in this relatively new division. Linked annual premium business was 119 per cent in excess of 1982 levels, whilst with the benefit of MIRAS conventional business increased by 152 per cent over the comparative figure. Single premium policies continued to attract attention, new business being more than twice that of the previous year.

Pensions Division
The results of this division also comfortably exceeded those of 1982. In the important area of group pensions, new business moved against market trends with annual premiums 58 per cent higher than the preceding year and single premiums up by 38 per cent. The Combine Plan, a unique group pension plan designed to offer the benefits of a final salary scheme with the early leaver advantages of money purchase, and Transplan, another major product innovation for the job mover, both performed well.

1983 also saw the successful launch of a Managed Funds contract marketed by the new insurance company within the Group, London and Manchester (Managed Funds) Limited and, with this, the foundation now exists for expansion in this important sector of the employee benefit market.

General Branch
An attractive new motor policy and more flexible means of premium payment were introduced during the year. Gross premium income rose by 10 per cent, but claims, with a marked increase in the provision for theft, continued to reflect the generally poor experience of the industry as a whole.

Bearing in mind the benefits to the home service division of having general branch policies to market alongside the life business, your Board considers that the loss of £245,000 is not unreasonable, although every effort will continue to be made to improve the position.

Investments
Throughout the world there have been signs that the long-awaited economic recovery has at last started. As so often before, this move has been led by the United States where the strength of the upturn during the first half of 1983 surprised most economic commentators. Because of the improved business prospects stock markets everywhere were buoyant.

For a UK investor, the strong performance of overseas markets was reinforced by the weakness of sterling whilst the domestic equity market also continued to move ahead. Full advantage of these movements was taken with a net investment by the main life funds of £16.9m in UK equities, and £5m in overseas equities. Fixed interest markets

were not ignored and £12.1m was invested in gilts and other fixed interest securities to take advantage of the high rates of real return available. New property purchases were again concentrated in the retail sector and after allowing for sale of some properties no longer appropriate for the portfolio, a further £8.5m was invested during the year.

1983 was a busy year for corporate activity amongst investment trusts; Broadstone, Dominion & General and Scottish Ontario were unlisted, several mergers took place, while British Industries & General and Moorside were taken over by companies outside the sector. As shareholders in many of these trusts, Group companies benefited from the changes, and in a number of cases played an active role in initiating or supporting the moves in the interests of policyholders. Nevertheless, holdings in investment trusts totalling £177m still represent a large part of several portfolios within the Group. The maintenance of a thriving investment trust sector is therefore of the utmost importance and I welcome the steps taken by some management groups to improve their public image as well as their investment performance. Such initiatives can only result in greater support for the sector from all types of investor.

Linked life assurance performed very strongly during 1983 with the total funds increasing by £33.5m to £112.6m. It was particularly pleasing to note that the Investment Trust Fund (holding £60.6m of policyholders' money) was the Group's best performing fund with an increase in unit price of 37.3 per cent during the year, compared with a rise of 34.7 per cent in the FT Actuaries' Investment Trust Index.

Mortgage lending is now undertaken on a variable rate basis, financed by external borrowing. This activity is being transacted through an associated company, London and Manchester (Mortgages) Limited, in which the Group has a 50 per cent interest. The new scheme has proved very successful with advances exceeding £25m including approximately £6.5m switched from existing fixed rate loans.

Bonuses
In the ordinary branch a reversionary bonus of £5.75 per cent of the sum assured has been declared compared with £5.50 per cent in the previous year. Industrial branch reversionary bonuses have also been improved.

The rise in market values of assets over the year has resulted in substantially higher bonuses and this is reflected in increased transfers from investments revaluation reserve, £4.0m to the ordinary life fund and £3.1m to the industrial life fund, totalling £7.1m, compared with £4.3m in the previous year.

Group Structure
Following the formation in 1981 of London and Manchester Group plc as the Group's holding company, your Board has been giving attention to the development of an appropriate structure for the Group's activities. As part of this exercise an authorised insurance company, London and Manchester (Managed Funds) Limited, and a unit trust management company, London and Manchester (Trust Management) Limited, commenced business during 1983 as subsidiaries of the holding company. In addition, Welfare Insurance Company Limited, previously owned by London and Manchester Assurance, was transferred to the holding company with effect from 31 December 1983. It is the opinion of your Board that this restructuring is in the interests of both policyholders and shareholders and will significantly assist the development of the Group in the years to come.

Share Capital and Borrowing Powers
The personal savings market is becoming ever more competitive and the possibility of the Group pursuing opportunities for expansion into other savings-related activities has been given added significance by the abolition of life assurance premium relief (LAPR). For this reason, and in order to give the Board more flexibility in managing the Group's affairs, shareholders are to be asked to approve an increase in the authorised share capital and the borrowing powers of the Board.

The Future
The Budget on 13 March withdrew LAPR from new business as from that date. This decision by the Chancellor has removed one of the incentives from saving through a life assurance policy and the effect will be to reduce the potential of some of the current range of products offered by companies in this market.

Your Board believes that in taking a positive attitude towards this change through the design of new products and in particular in emphasising a life assurance company's unique role in the savings industry it will still be possible to attract a considerable volume of business to the Group. The pensions and general branch marketing will be unaffected and indeed could be enhanced. Your Group's prosperity and performance will continue to be based on well designed products and an effective investment policy, backed by efficient administration and direction, to give a good service and financial return to policyholders and will not be materially affected by these changes.

The life broker and pensions divisions continue to meet their planned business objectives and provided that business is maintained shareholders will soon see satisfactory profit figures emerging as a result of their achievements. The inherent growth of premium income and the long term prospects in the home service division will benefit both from the economic recovery and the LAPR advantage that existing life business will retain.

The Group has a number of divisions which can work within clearly defined plans towards profit-centred business objectives and the structure now fits the overall corporate plan to which your Board has been working, with particular reference to the diversification introduced during the last three years. Opportunities for profitable expansion and diversification will be taken, providing there is no lack of business to be written and that, providing the lower levels of inflation can be maintained, this can be serviced at an increasingly acceptable cost. The prospects for financial services in this country are good and your Group will continue to take full advantage of any opportunity which may arise.

The Annual General Meeting will be held on 4 May 1984. Copies of the Report, which includes the full text of the Chairman's Statement may be obtained from the Joint Secretary at Imperial House, Dominion Street, London EC2M 2SP.

Notice of Redemption

International Standard Electric Corporation

6% Sinking Fund Debentures Due 1987

NOTICE IS HEREBY GIVEN that, pursuant to the provisions of the Indenture dated as of May 15, 1967, under which the above described Debentures were issued, \$1,834,000 principal amount of the said Debentures of the following distinctive numbers has been drawn by lot for redemption on May 15, 1984 (the "sinking fund redemption date") through the operation of the Mandatory Sinking Fund provisions at 100% of the principal amount thereof (the "redemption price"), together with accrued interest to the redemption date:

41,696 COUPON DEBENTURES BEARING THE PREFIX LETTER M											
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WORLD STOCK MARKETS

NOTICE
To the holders of
GFC INTERNATIONAL
FINANCE N.V.10 1/4% Guaranteed Debentures
Due 1995

The annual financial statements of GFC International Finance N.V. and its parent, General Foods Corporation, are available for inspection at the offices of the various Paying Agents during normal business hours.

Copies of these statements may be procured by written request to:

General Foods Corporation
250 North Street
New York, New York 10025
U.S.A.

Attention: Alas M. Shaver, Esq.
Corporate Secretary

Dated: April 12, 1984
GFC International Finance N.V.

The Royal Bank
of Scotland plcU.S.\$75,000 Floating
Rate Capital Notes
due 1986 to 1994

For the three month period
16th April, 1984 to 16th
July, 1984, the Notes will
bear an interest rate of 11 1/4%
per annum. Interest payable
on 16th July, 1984

Bankers Trust Company,
London

Indices

NEW YORK

	Apr. 15	Apr. 12	Apr. 11	Apr. 10	Apr. 9	1984	Since Completion
	High	Low	High	Low	High	Low	High
Dow Jones	1158.16	1157.14	1156.87	1156.87	1156.87	1156.87	41.82
Industrial	1158.16	1157.14	1156.87	1156.87	1156.87	1156.87	41.82
Transport	68.00	68.18	68.18	68.18	68.18	68.18	0.18
Utilities	497.33	497.33	497.33	497.33	497.33	497.33	0.00
Trading Vol	125.34	125.34	125.34	125.34	125.34	125.34	0.00
Day's High	1158.28	1158.28	1158.28	1158.28	1158.28	1158.28	0.00
Industrial div. yield %	4.85	4.74	4.74	4.74	4.74	4.74	0.00

STANDARD AND POOR'S

	Apr. 15	Apr. 12	Apr. 11	Apr. 10	Apr. 9	1984	Since Completion
	High	Low	High	Low	High	Low	High
Industrial	178.50	178.75	178.50	178.50	178.50	178.50	0.25
Compt's	157.11	157.75	156.87	156.87	156.87	156.87	0.88
Industrial div. yield %	4.85	4.74	4.74	4.74	4.74	4.74	0.00
Industrial P/E ratio	11.50	12.25	12.15	12.15	12.15	12.15	0.00
Long Gov. Bond yield	11.97	12.37	12.37	12.37	12.37	12.37	0.00

N.Y.S.E. ALL COMMON

	Apr. 15	Apr. 12	Apr. 11	Apr. 10	Apr. 9	1984	Since Completion
	High	Low	High	Low	High	Low	High
NYSE	100.51	100.51	100.51	100.51	100.51	100.51	0.00
NYSE	100.51	100.51	100.51	100.51	100.51	100.51	0.00

MONTREAL

	Apr. 15	Apr. 12	Apr. 11	Apr. 10	Apr. 9	1984	Since Completion
	High	Low	High	Low	High	Low	High
Industrial	417.24	417.24	417.24	417.24	417.24	417.24	0.00
Compt's	225.81	225.81	225.81	225.81	225.81	225.81	0.00

NEW YORK ACTIVE STOCKS

	Apr. 15	Apr. 12	Apr. 11	Apr. 10	Apr. 9	1984	Since Completion
	High	Low	High	Low	High	Low	High
Industrial	417.24	417.24	417.24	417.24	417.24	417.24	0.00
Compt's	225.81	225.81	225.81	225.81	225.81	225.81	0.00

Redemption Notice

City of Oslo (Norway)

9% Floating Rate External Loan Bonds due May 1, 1985

NOTICE IS HEREBY GIVEN, pursuant to Fiscal Agency Agreement dated as of May 1, 1970 under which the above described Bonds were issued, that Citibank, N.A., Fiscal Agent, has selected by lot for redemption on May 1, 1984 through the operation of the Sinking Fund redemption plan of \$1,855,000 principal amount of said Bonds at the Sinking Fund redemption price of 100% of the principal amount thereof, together with accrued interest to the date fixed for redemption. The serial numbers of the Bonds selected by lot for redemption are as follows:

BOND NUMBERS									
MT0 1940 3122 5149 7184	9174 10089 12340 12350 13189 14441 15364 16381 16979 17622 17997	9182 10074 12344 12354 13187 14442 15367 16382 16979 17620 17995	9190 10109 12354 12364 13189 14447 15368 16383 16980 17623 18000	9198 10144 12364 12374 13190 14448 15369 16384 16982 17626 18003	9206 10179 12374 12384 13191 14449 15370 16385 16983 17629 18006	9214 10214 12384 12394 13192 14450 15371 16386 16984 17632 18009	9222 10249 12394 12404 13193 14451 15372 16387 16985 17635 18012	9230 10284 12404 12414 13194 14452 15373 16388 16986 17638 18015	9238 10319 12414 12424 13195 14453 15374 16389 16987 17641 18018
86 1943 3132 5155 7191	9188 10082 12338 12348 13186 14446 15364 16382 16979 17620 17996	9196 10117 12348 12358 13189 14447 15365 16383 16980 17623 18000	9204 10152 12358 12368 13191 14448 15366 16385 16982 17626 18003	9212 10187 12368 12378 13191 14449 15367 16386 16982 17629 18006	9220 10222 12378 12388 13193 14450 15368 16387 16983 17632 18009	9228 10257 12388 12398 13195 14451 15369 16388 16984 17635 18012	9236 10292 12398 12408 13197 14452 15370 16390 16986 17638 18015	9244 10327 12408 12418 13199 14453 15371 16391 16987 17641 18018	9252 10362 12418 12428 13201 14454 15372 16392 16988 17644 18021
102 1946 3142 5169 7215	9200 10094 12345 12355 13189 14448 15366 16384 16980 17623 18000	9208 10129 12355 12365 13191 14449 15367 16385 16981 17626 18003	9216 10164 12365 12375 13191 14450 15368 16387 16983 17629 18006	9224 10199 12375 12385 13193 14451 15369 16388 16984 17632 18009	9232 10234 12385 12395 13195 14452 15370 16389 16985 17635 18012	9240 10269 12395 12405 13197 14453 15371 16390 16986 17638 18015	9248 10304 12405 12415 13199 14454 15372 16391 16987 17641 18018	9256 10339 12415 12425 13201 14455 15373 16392 16988 17644 18021	9264 10374 12425 12435 13203 14456 15374 16393 16989 17647 18024
118 1949 3152 5183 7229	9203 10097 12348 12358 13190 14449 15367 16385 16981 17624 18001	9211 10132 12358 12368 13192 14450 15368 16386 16982 17627 18004	9219 10167 12368 12378 13192 14451 15369 16387 16983 17630 18007	9227 10202 12378 12388 13193 14452 15370 16388 16984 17633 18010	9235 10237 12388 12398 13195 14453 15371 16389 16985 17636 18013	9243 10272 12398 12408 13197 14454 15372 16390 16986 17639 18016	9251 10307 12408 12418 13201 14457 15373 16391 16987 17642 18019	9259 10342 12418 12428 13203 14458 15374 16392 16988 17645 18022	9267 10377 12428 12438 13205 14459 15375 16393 16989 17648 18025
134 1952 3155 5186 7236	9206 10100 12351 12361 13191 14450 15368 16386 16982 17627 18001	9214 10135 12361 12371 13192 14451 15369 16387 16983 17630 18004	9222 10170 12371 12381 13192 14452 15370 16388 16984 17633 18007	9230 10205 12381 12391 13193 14453 15371 16389 16985 17636 18010	9238 10240 12391 12401 13195 14454 15372 16390 16986 17639 18013	9246 10275 12401 12411 13197 14455 15373 16391 16987 17642 18016	9254 10310 12411 12421 13201 14456 15374 16392 16988 17645 18019	9262 10345 12421 12431 13203 14457 15375 16393 16989 17648 18022	9270 10380 12431 12441 13205 14458 15376 16394 16990 17651 18025
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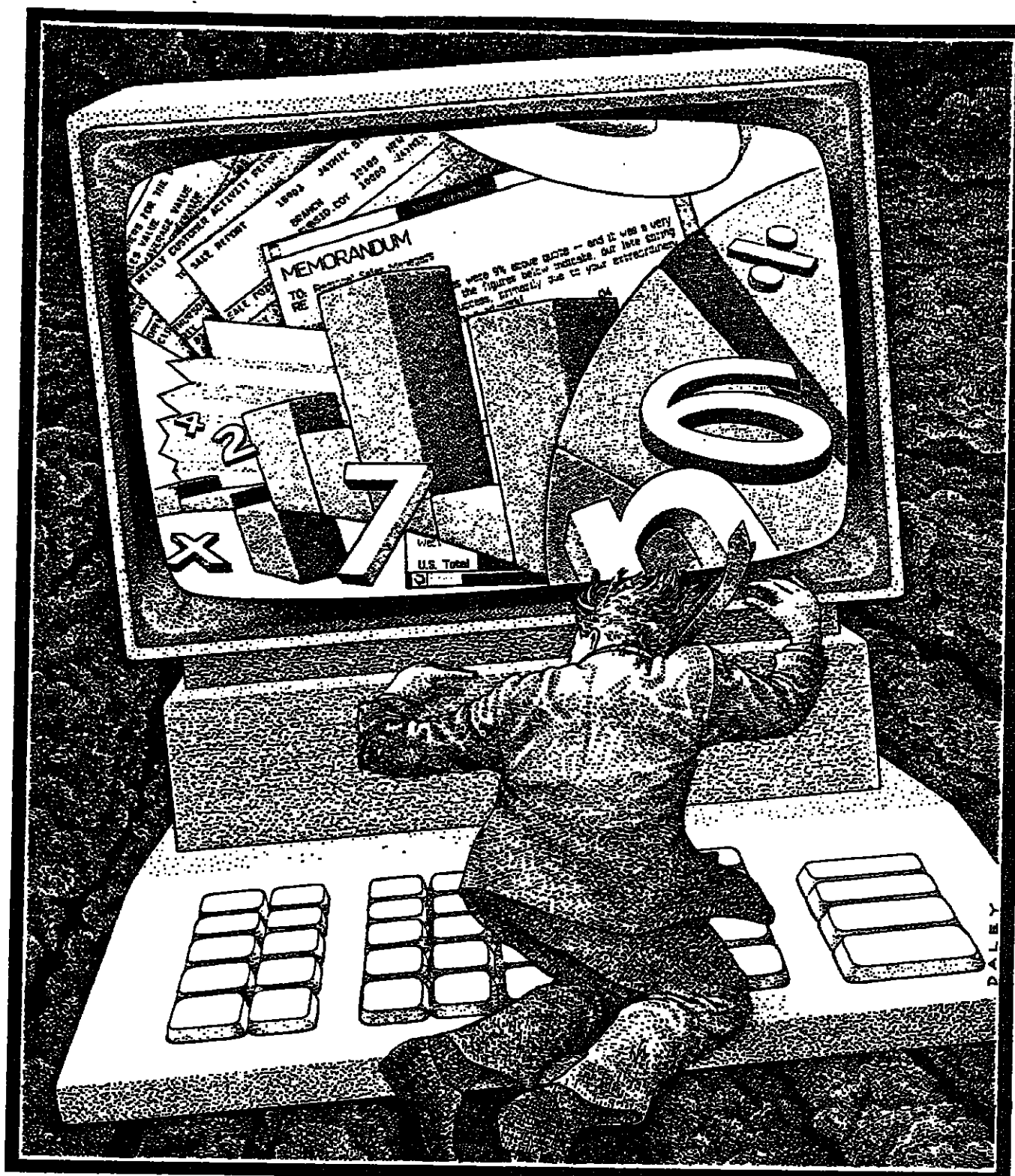
FINANCIAL TIMES SURVEY

THE DESK TOP
REVOLUTION

The desktop revolution has started in earnest as professional personal computers begin to appear on executives' desks. To some, they represent a new measure of power and effectiveness. Others, perhaps still in the majority, fear they will soon be clinging on desperately, swept helplessly towards an alien digital future. This survey examines the biggest change in business technology since the invention of the telephone.

INSIDE

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One year and three months ago David Jones, writing for the Financial Times, said "I have much to thank Pete & Pam Computers for in providing support". Pete & Pam Computers tries to keep in touch with its customers so that, if one solves a particular problem, the solution is available to its other customers."

Financial Times 18th, January 1983.

Two months later, the Drawing Paper, the publication for Draughtsmen, Engineering Designers, Architects and Graphics Designers, reported "Whilst the company has grown considerably, its reputation for offering help and advice still holds good".

The Drawing Paper, March 1983.

Surveyor, the Public Works weekly, said in June "Pete & Pam Computers range of bang-up-to-date products for the Apple was, and still is, second to none, and its knowledge of the products excellent".

Surveyor, 9th, June 1983.

In August's edition of Computer Dealer, John Hartley said "Pete & Pam Computers had to be our first choice with an excellent reputation for technical support".

Computer Dealer, August 1983.

And Ron Ede, writing for the local Government Chronicle in August, reported "I was appointed at a time when hardware and software for the Apple was not as readily available as it is today, but I found excellent suppliers in micro computer distributors, Pete & Pam Computers. As computer professionals, we knew exactly what we wanted to get out of the Apple. Pete & Pam Computers came up with the goods and the service required".

Local Government Chronicle, 5th, August 1983.

Paul Walton, in the February edition of Software, writes "Pete & Pam deals with the widest and fastest growing range of micro computer packages on the market".

Software, February 1984.

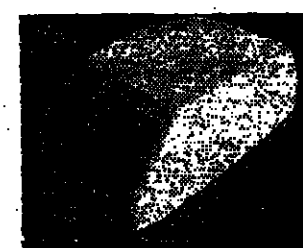
In the Business World, the Computer World and in Public Services the opinion seems to be the same - a growing company, a growing range, yet still maintaining that essential personal touch.

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THE DESK-TOP REVOLUTION 2



● Above: The Microsoft Mouse, a hand-held screen pointing device.

● Left: Users of the Hewlett Packard 150 touch the screen to initiate response from the computer.

● Right: High definition screens, exemplified by the Apollo "Domain" workstation pictured here, improve graphics capability. The small pad to the right of the keyboard can be touched to guide a cursor round the screen.



Difficult decisions are now being made about the best way of moving ahead in the pursuit of office automation

Battle lines drawn over work-stations

THE ELECTRONIC workstation for executives has always taken stage centre in scenarios of the office of the future.

With the evolution of the professional personal computer over the past decade, these predictions have been realised. Steven Jobs and Stephen Wozniak started work on the design for their "Apple" computer back in 1975, a machine produced in very small numbers. They launched the Apple II in 1977 and from that moment the revolution was unstoppable.

More than a million professional personal computers were sold in the U.S. in 1982, more than 2.6m by the end of 1983. IBM, the world leader in professional computers, expects to ship more than 1.5m of its machines this year.

BY ALAN CANE

At least 150 companies are now manufacturing personal computers—the leaders include IBM, Apple, Wang, DEC, Hewlett Packard, Xerox, Commodore, NCR, Sperry, ICL, Philips, NEC, Epson, and ACT. A new industry has grown up, making and packaging the software needed to run business applications on these machines. Its leaders include Microsoft, Digital Research, Peachtree, Vivacorp, Microfocus and Lotus Development. But it would be a mistake to think that the desk-top revolution is only about the genesis and evolution of the professional computer. The picture is much more complex than that.

It involves difficult decisions about the best way to move ahead in office automation. The factors which have to be taken into account include the cost of the equipment, the cost-benefits expected from their adoption, the response of office

workers to the new office practices which will inevitably follow the installation of "intelligent" machinery.

It will involve consideration of the kind of jobs which lend themselves to office automation and the jobs which may be displaced or lost as a result.

This, of course, is a counsel of perfection. Like most human endeavours, the move to office automation is likely to involve stops and starts, mistakes, misunderstandings—perhaps with the occasional triumph.

In the UK, for example, since

1981 the Government has been sponsoring a series of office automation pilot programmes at a cost of about £5m. Preliminary results were released last week suggesting difficulties and disappointments have been the order of the day, rather than unmitigated success.

But there was no enthusiasm among the participants for a return to the old manual office, although they found it hard to rationalise their belief in an electronic future.

The pattern of development in office automation has been one of small practical steps taken in the shadow of massive conceptual leaps.

Consider the typewriter. The first word processors became available in the middle part of the 1970s but there was no sudden rush for these new fangled machines. Instead, office managers moved to electronic typewriters, cheaper, more familiar machines that had a few observable advantages compared with electric machines—memory, automatic printing routines, spelling checkers which were derived from computer technology.

Today, there is still more immediate interest in the briefcase sized Brother "personal printing machines" costing up to, say, £300 than in fully fledged personal word processing systems.

The personal computer itself is a very humble realisation of the executive's electronic workstation compared with the dreams of 25 years ago.

These dreams generated chiefly in the Xerox Corporation's research laboratories in Palo Alto, California, centred around a screen which represented the executive's desk top, a keyboard and "mouse" (desk top screen pointer) with which to communicate with the computer and a network linking individual workstations together and to share equipment such as large file storage devices and printers.

Xerox's failure to steal away with the office automation market, given such a feast of novel ideas, is probably equalled only by Linotype's failure to hold on to the data processing market after IBM's initial lack of interest.

Advanced concepts

There were other factors at work, however. Xerox was trying to implement advanced concepts in a technology not cheap enough for the purpose.

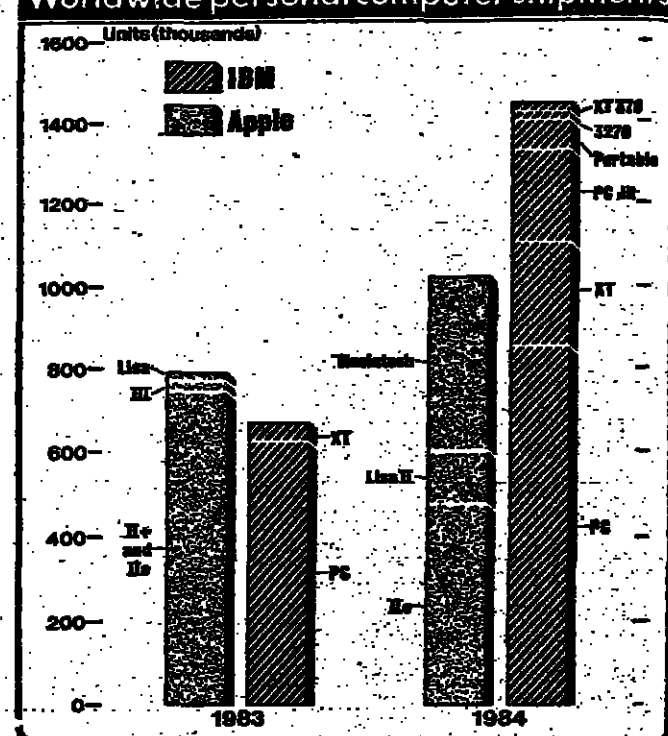
Xerox eventually produced its own version of the Xerox "Star", but far too late (1981) and far too expensive (£16,000). Apple Computer produced its own version of the Xerox approach, Lisa, in 1983—but again too late, for IBM was already making massive strides in the personal computer marketplace—and, at \$10,000, still too expensive.

This January, Apple launched Macintosh which at just over \$2,500, at last brought technology down to a price at which it could be considered as a starter in the automated office.

It has to be said that, so far, the desk top revolution looks like being a replay of the early years of commercial computing when after a slow start and with products which were only adequate rather than sparkling, IBM proceeded to win more than 60 per cent of the majority of national computer markets.

Already it has more than 30 per cent of the U.S. market and more than 27 per cent of the European—where it launched its machine only two years ago and where it has met unexpectedly stiff opposition from the likes of Olivetti and ACT (selling the Victor Sirius and its own Apricot).

Worldwide personal computer shipments



The battle lines now seem to be drawn between IBM and IBM-like machines and Xerox-like machines, such as Macintosh. The IBM PC and its clones are basically very orthodox and straightforward data-processing machines which are as much "mainframes" as they are personal computers.

In other words, they are designed to be connected to a mainframe computer, from which they can draw down information for modification and processing. IBM has already made this clear by naming one of the latest of its machines the 3270 Personal Computer. The 3270 is IBM's most popular computer terminal family.

The Macintosh-like machines, while they can be connected to mainframes for up and down loading data, are principally directed towards communications among themselves—providing, for example, support for a group of people in a single department.

Note also that the emphasis on the kind of user has changed. Word processors, secretarial tools, professional computers are designed to support the executive, professional and manager.

That means a new concern with ease of use. So "mice" have started to proliferate on desk tops while Hewlett-Packard is promoting a machine with a screen you simply touch to provoke action.

(Pointing is the right metaphor but touching the screen is not sufficient, says, said one advocate of mouse technology.)

A number of companies are offering "windows"—ways of dividing the screen into a number of sections each of which can represent a different document on the metaphorical desk top.

Each of these windows can be used to screen a separate application. So an executive could have a spreadsheet open in one window, a bar chart in another, balance sheet in a third and the text of a report coming the results of all these windows in the fourth.

A third approach, owing little to that of either Apple or IBM is seen in offerings from Wang and to a lesser extent DEC. Wang's approach, implemented in its "Alliance" workstations, is to integrate data, word images, audio, networking and human factors.

Wang's reputation is founded on its brilliant and innovative approach to office word processing.

ing—it has yet to establish itself as firmly in the executive workstation area.

It has also to be said that the Japanese have, as yet, made little progress in the West with their personal computers—but this could change dramatically as NEC and others improve their marketing channels.

According to Frost and Sullivan, the New York-based consultancy, what users want most of their workstations is compatibility with other systems.

It is a common complaint. Last week, a senior executive in a London financial company rang to complain that his offices were becoming "Tower of Babel" in information. "There are different machines everywhere I look, and there must be 15,000 firms with exactly the same problem. "How do we get out of this mess?"

Chief factor

Frost & Sullivan found that in order, the selection criteria were ease of use for the typical user, software availability for standard users, ease of maintenance, the manufacturer's reputation, and price.

It has to be said that this hardly reflects the true world: IBM's reputation for dependability to client factor in the success of its PCs and it sets the standard through its operating system for ease-of-use and software availability.

Nevertheless, the Frost & Sullivan research shows that over 90 per cent of executives wanted a workstation and that almost all of these were prepared to cope with the keyboard. Many executives still feel it might be somewhat damaging to their corporate image to use a workstation but research indicates that for the most part the perception of management in this regard is changing rapidly.

"Seventy-one per cent replied that long-term desk-top workstations would fit into their corporate environments and the images they want to convey." (The U.S. Professional/Executive Workstations Market, Frost & Sullivan, 1983.)

The projections suggest the ratio of personal workstations to mainframes will approach that of the telephone by 1990 (1:2).

The screen may well become the metaphor for the desk top but there will be nothing metaphorical about the profits to be made from selling the right workstation at the right price and at the right time.

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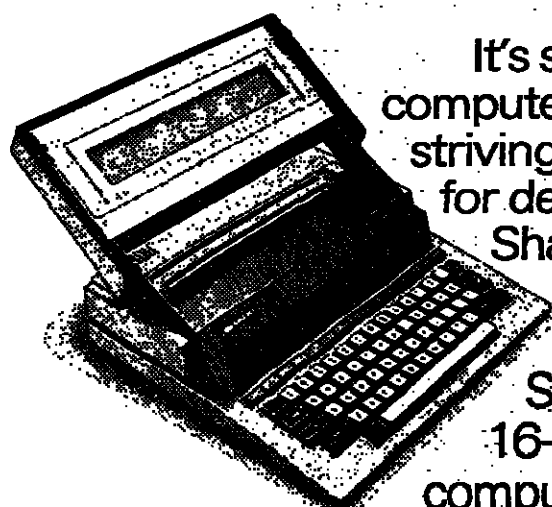
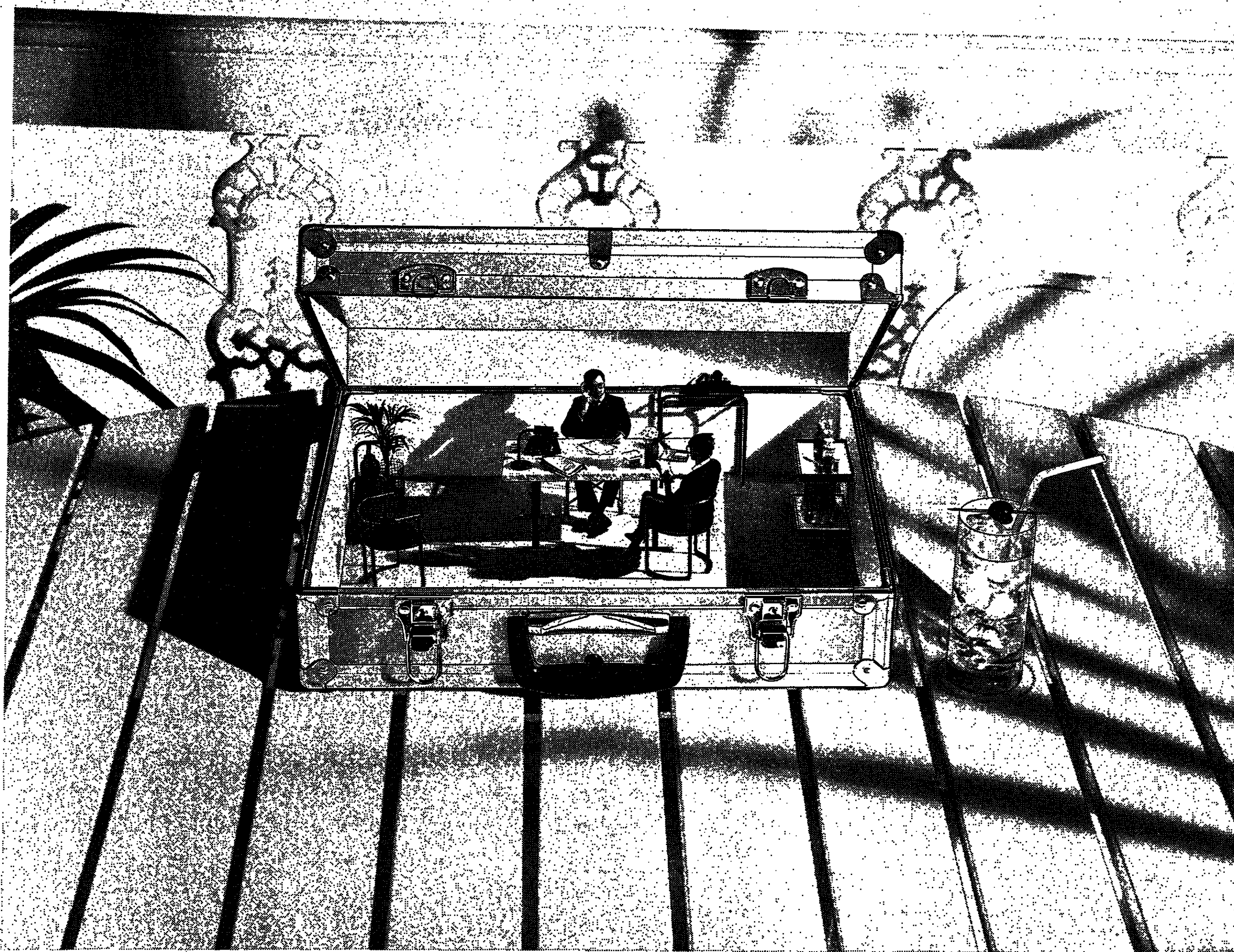


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THE DESK-TOP REVOLUTION 4

Professional personal computer sales are growing rapidly and the one terminal per employee goal looks increasingly attainable

Moving towards the one-to-one ratio

THE professional personal computer is the key to the desk-top revolution.

It is becoming the de facto executive workstation, the computer terminal which combines voice telephony with data transmission, electronic mail with graphics capability, word processing with data processing.

Best estimates suggest that the market for professional personal computers (PPC) is growing at about 50 per cent a year in the U.S. and about 30 per cent a year in Europe. The average rate of growth between 1982 and 1985 is about 40 per cent world wide.

But virtually none of the personal computers being shipped today—and the figure was 1.5m for 1983—are yet able to feature all the capabilities of the executive workstation. There are sufficient indicators, however, to suggest it will be a comparatively short time before machines combining all these features are as common on desk tops as the telephone is today.

For example:

● North's Telecom's Display-phone makes possible voice and data communications in one desk-top unit. Claimed to be the world's first combined business telephone and data terminal capable of transmitting, receiving and storing information, it has a video display screen and a retractable video display screen.

● Lotus Development Corporation, a U.S. computer software company grew from nothing to revenues of \$53m last year through the success of a program called 1-2-3.

This program, integrated spread sheet analysis, data base management and graphics capability. Integrated? All that means is that it is possible to switch between these functions

BY ALAN CANE

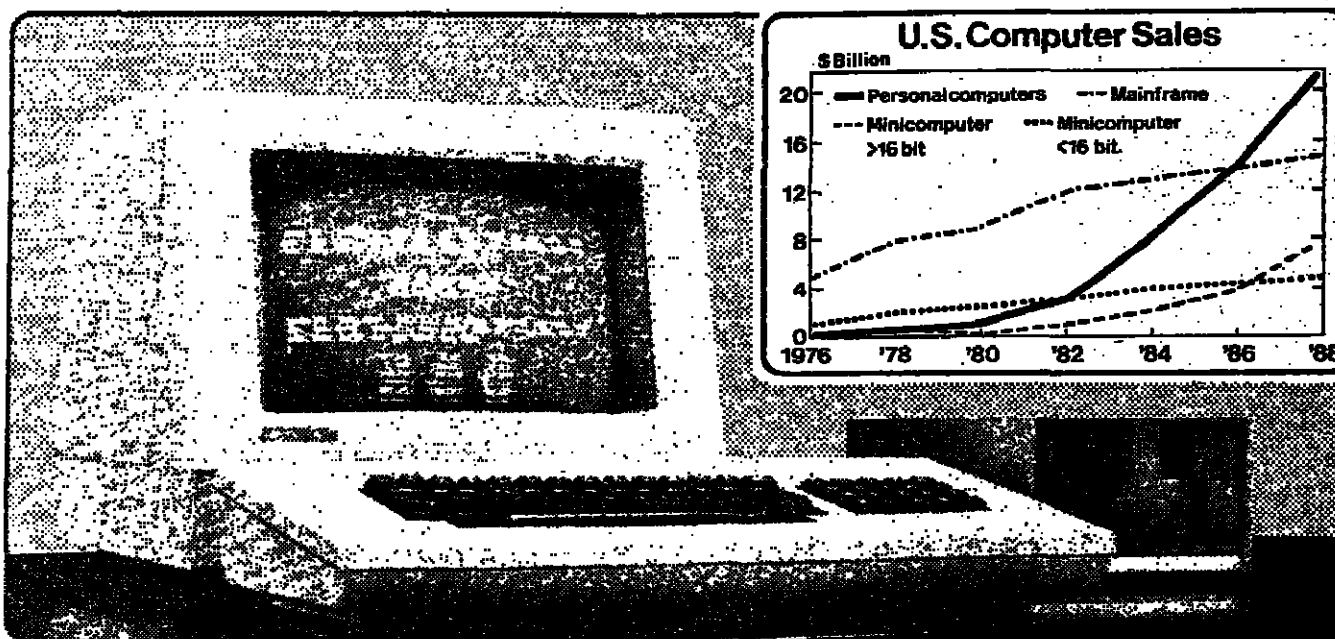
without having to go through the tedious business of storing information already processing and loading the computer's memory with fresh instructions.

It seems obvious, but so new is the professional personal computer business that until Lotus launched 1-2-3, that capability was simply not available.

Now Lotus is trying to do it again with a program called "Symphony" which adds word processing and communications to the basic package. It may not find it so easy second time around.

● Most significant of all, the first software packages which make it possible to link microcomputers to mainframes as if they were conventional computer terminals are beginning to make their mark.

Why should that be important? Well, personal computer users in large organisations frequently want to be able to make use of the powerful computer programs already developed for their company's mainframe machine.



They may want to be able to call down to their own machine records held in any one of a number of electronic files maintained by the company, or they may want to be able to treat a network of personal machines as data entry devices.

Among the leading companies which have introduced micro-mainframe link packages are MSA, the world's largest independent software house, together with McCormack and Dodge and Informatics.

According to Mr David Ferris of Ferris Corporation, a UK consultancy specialising in professional personal computing said last year: "MSA is particu-

lar in doing good things. They have now accumulated a lot of experience in the area. Their product, called 'Peachlink', is much improved in its second release."

The shift towards integration in the workstation is illustrated by the fact that late last year MSA announced that its Peachlink software could be interfaced directly to Lotus 1-2-3 package. In other words, information could be taken from a mainframe computer file, downloaded to the microcomputer and then processed using the facilities built into 1-2-3.

All these developments suggest there is no doubt that the

professional personal computer will become the executive workstation. But in the jungle of microcomputers available today, how can the true PPC be identified?

First, it is a truly professional machine, typically based on a fast and powerful 16-bit or 32-bit microprocessor (16-bit machines handle 16 basic information units simultaneously; 32-bit machines handle 32 and approach the processing capability of a mainframe computer).

But although most of the principal vendor's products fit this description—the IBM PC, the Wang Professional Com-

puter, the new range of AT&T desk top machines—it has to be said that many perfectly adequate professional machines are the Apple II, for example, use 8-bit chips and have proven fast enough for most business purposes. There is also a huge amount of professional 8-bit software available. The focus belongs to the faster machines, however.

Whatever processor is used, it will be fast enough to run large financial modelling and analysis packages like Lotus 1-2-3, and it will have considerable graphics capability to deal with the generation of tables, bar charts and the like.

Personal implies a one-to-one relationship between staff and machines a ratio which manufacturers believe to be possible at some time in the future. At present, surveys suggest that, in reasonably advanced companies the ratio is 17 staff to each personal computer.

Electronically advanced companies which depend on computer power are moving towards the one to one situation.

Mr Calum Macaskill, deputy chief general manager of the world's largest building society, the Halifax, has been quoted as saying: "Computer power is the horse power of our business... One in three of our staff now works with a computer terminal all day and 80 per cent of our staff use computer technology at some time during the day."

IBM, the world's largest computer company, has a ratio at present of 2.5 staff to each computer terminal, and sees a ratio of between two and three staff to each terminal as the norm for every company in the future.

There are those who would argue that eventually there will be more than one computer terminal per employee, looking forward to a point where each staff member would have his or her own desk-top computer, but this will be a number of years away.

There might also be a number of portable computers which staff might take out into the field or transport between office and home.

Portable professional personal computers have some way to go to match the capabilities of desk-top machines, but they are reaching considerable distances or technology pushes back the frontiers of what is possible to do in a small space. Machines like the Husky and Hunter, the Grid Computers and the Gavilan—tiny machines that slip into a briefcase yet have liquid crystal or electro-luminescent displays on which word processing or graphics creation are perfectly possible—are changing ideas of mobile computer power.

Expensive

According to Mr John Eilenby, founder of Grid Systems which makes the beautiful but expensive Compass: "We are embarking on a new generation of products which will complement the desk-top variety, and that portable computers will over the years become a major business tool." He went on: "I also believe that they herald a major breakthrough in computing culture which will significantly change not only the standards of users and telecommunication authorities, but will affect manufacturing and component design substantially."

IBM clearly thinks so and so does Apple. The two leaders of the personal computer business have launched or are about to launch their own portable machines. Within years the desk top revolution could become the desk-top-and-lip-pocket revolution.

Jason Crisp highlights trends among the computer manufacturers

Big producers change gear

ABOUT four or five years ago there was a sense of weighty and authoritative reports on office automation. In general, these tended to paint a picture of a highly sophisticated office using a comprehensive integrated network of computers, computer equipment and communications.

As early as 1981, it had become more or less obligatory for equipment suppliers in the U.S. to spell out their office automation strategies. When Hewlett-Packard, Digital Equipment (DEC) and Wang announced their office automation strategies in close succession that autumn, several analysts sniffed that they were late.

By then, practically every company from the world of computers, offices, equipment and telecommunications were finalising their plans to become a major player in this new integrated world of computers and communications. But everyone saw the customer as the Fortune 500 type of company.

About that time a fierce debate grew around local area networks, supposedly the essential communications channel to link workstations, computers, word processors, larger printers and every other electronic device imaginable.

The big question was, would everyone opt for baseband systems like Ethernet backed by Xerox, Intel and DEC or would they go for a broadband system like Wangnet, which can carry much more information such as voice and video?

But while the talking was going on, two things were happening in the marketplace. One office automation equipment—in the conventional sense—being bought was word processing. Two, an unexpected and dramatic expansion was beginning in the personal computer, the desktop revolution had started.

"The development of the personal computer has made it the box of the future, the universal terminal. It has become the key route to office automation although I doubt most users recognise this at the moment," commented Neil Farmer, senior consultant at Butler Cox, one of the leading consultancies studying office automation.

The extraordinary success particularly in the U.S. of IBM in personal computers has put beyond question that it will be the major force in office automation. In addition to its dominance of the mainframe computer business, it is now expected to produce about 30 per cent of all personal computers this year, many of which will be extensively used in large organisations.

IBM also has a 20 per cent stake in Rolm, the fast growing Californian telecommunications group, which greatly strengthens its position in that field.

Wang, the U.S. wordprocessing company, is generally acknowledged as the second strongest force in office automation at present through its success in word processing and small business computers. Wang has defined the key technologies of office automation in six areas: word processing, data processing, image processing, audio processing (voice-mail), networking and "human factors".

But few can doubt that the major impact in office automation has come from the personal computer, especially from IBM PC, and Wang's first major thrust of Apple.

office automation products launched in 1981 were for the most part aimed at commercial use, mainly with each other. But in October last year the company launched an open access policy which should enable its products to be integrated with those of other manufacturers. The move towards improving communications between products of different companies is becoming much more commonplace. Many of the leading computer companies—such as Digital Equipment, Hewlett-Packard and Data General—are working with a number of telecommunications companies—like Rolm, Mitel or Northern Telecom—to establish a common standard to enable communications between computer equipment and private automatic branch exchanges (PABXs).

DEC itself must count as one of the world's potential leaders in office automation. A recent report from International Data Corporation on Major Vendor Strategies comments: "DEC, in terms of units, is the world's second largest computer company and it is out to achieve the same status in the office world."

While IDC notes that it is difficult to define ranking within the office automation field it says everyone knows what being number two means: "being bigger than Wang and pushing IBM."

Claims

But for most of the industry the chance of becoming a major supplier of all types of equipment is not a reality. Even giants like Xerox, which has made some major claims to become a leading office automation supplier, finds itself succeeding only in some specialised areas.

There is a very great number of other companies seeking to make an impact in office automation, including the leading mainframe companies such as Honeywell Information Systems, Burroughs and ICL, to the leading telecommunications groups such as American Telephone & Telegraph, Northern Telecom, Mitel, LM Ericsson and Plessey.

Potentially the greatest challenge from the telecommunications industry comes from AT & T, which has equity and marketing links with Olivetti, the leading European office equipment suppliers. Earlier this month AT & T launched its major range of computers. But it is likely to take AT & T considerable time to become a major force in computing.

The role of the telecommunications companies in general in office automation is growing. The PABX, for instance, has become much more widely accepted as the probable core for any network. The main advantage is that the network and wiring is already in place. In addition, new techniques are making it possible to send far more information along a pair of copper wires, which means several cables are only needed where very high volumes of data have to be sent.

But few can doubt that the major impact in office automation has come from the personal computer, especially from IBM PC, and Wang's first major thrust of Apple.

For the ordinary desk job, however, you could probably get away with an IBM PC

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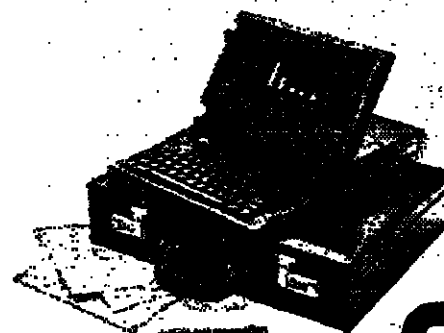
Finally, you'll notice the GRiD doesn't come out of something looking like a sewing machine box.

In its elegant, black magnesium case, it's as personable as it's personal.

But as you might expect, there's a price to be paid for such an exceptional machine.

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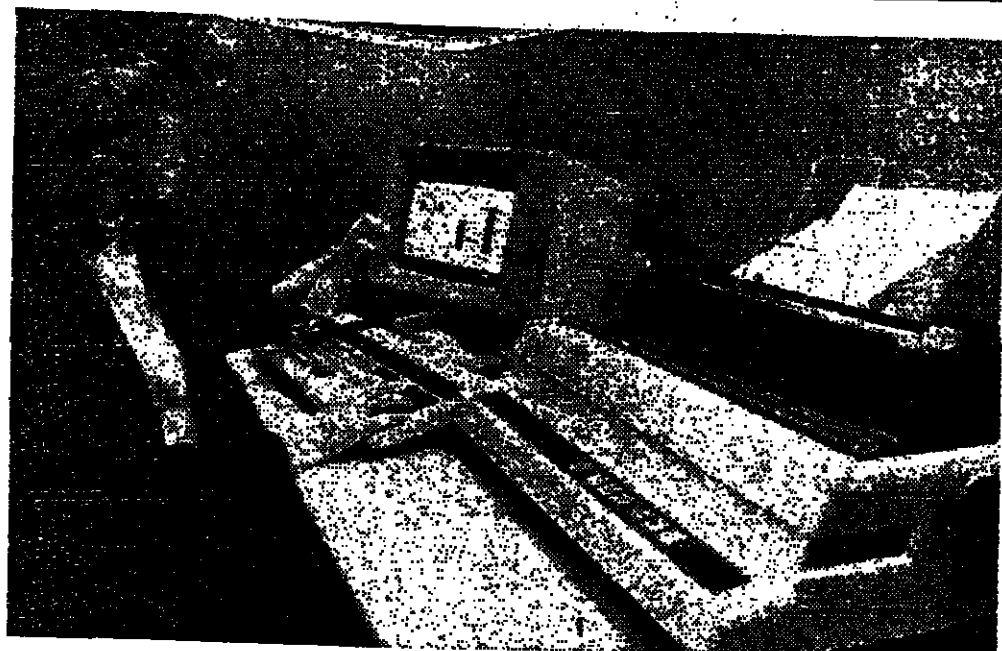


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THE DESK-TOP REVOLUTION 5



Left: Information Technology (ITL) pioneered workstations with the capacity to add voice "annotations" to text stored in electronic files. Centre: In a City of London showroom, a salesman demonstrates a Tandy TRS 80 computer to a prospective client. Right: Mitel's "Kontakt" workstation integrates screen, floppy disk drive, keyboard and telephone handset



Choosing the best operating system is becoming increasingly complex. Claire Gooding offers some advice

How to pick a way through the maze

IN THE beginning you want one application and, at first, that's enough. You buy (according to the marketing people) "a total solution," and the operating system comes as part of it. So why bother about such technicalities as an operating system?

The answer is that the operating system is something of a political choice. Once installed, it dictates the environment in which all other programs will have to run.

In the same way that it hardly matters whether your videotape is VHS or Betamax if your only wish is to see "The Sound of Music," certain applications look exactly the same under different "host" operating systems. But the decision affects any later purchases; once you've chosen, you're limited to buying other software within that environment.

So it is as well to be aware of the differences, the costs, short-term and long-term, and the varying vistas (or closed alleyways) offered by the different operating systems.

It is no longer a question of whether to run CP/M or MS-DOS, the best-known and long-debated of the micro-computer operating systems.

The decision is more complex, and depends on whether you want a multi-user or single user, multi-tasking or single-tasking system, and networked or not.

Terms tend to be used very loosely in the computer industry.

The "desktop" computer can mean anything from the independent eight-bit Apple to the minicomputer-on-a-desk systems which are now being offered by mini manufacturers. These are often based on powerful processors like Motorola's 68000, and offered at the bottom of the mini range.

In effect, the term "desktop computers" could embrace Personal Computing as first introduced by IBM: a terminal on the desk connected to the mainframe and firmly under the control of the DP department.

The variety of operating systems used for personal computers is confusing, even to people in the industry. The more so because, despite the variety, their suppliers put a heavy reliance on the "standard" tag.

The importance of using a standard operating system is access it gives to popular software packages, yet the standards themselves have different "flavours," which in turn affect

the packages.

Single-user systems are the Penny Plain option. CP/M and MS-DOS are both single-user systems. You sit at the screen and do one job at a time. If you wish to print something, then you must leave the current task, run the print job, and then find your way back to where you were.

This has long irritated users who often need to look up something in another file, or who become impatient waiting for a heavy processing job which ties up the terminal.

Multi-tasking systems are the next step forward. Some multi-tasking systems simply allow a task to run in the background, "concurrently." You still have to get out of one task or "mode" before kicking off another, although more sophisticated systems "freeze" one screen, and let you back in at the same place again when you have looked up that elusive value elsewhere.

Digital Research, originator of CP/M, was one of the first companies to make things more convenient with its Concurrent CP/M.

Windows bring another dimension to multi-tasking. The revolutionary concept was introduced by Xerox's famous Smalltalk system, whose inventors loathed the business of logging in and out of different "modes."

The solution: emulate that high-tech piece of office equipment, the desk, which allows you to have more than one piece of paper on it at a time. Windows enable several tasks to appear on the screen simultaneously, though the limit most systems (and people) can handle is four.

Windows are undoubtedly a breakthrough for the single user, although they demand some fairly heavy engineering. Apple's Lisa, specifically built around the concepts of windows and pictures, paid for the novelty with a notoriously slow response.

Bandwagon

More seriously, it demanded applications packages custom-built for its glamorous environment—not easily coaxed from the software suppliers whose eyes were fixed on the standard as set by IBM. The IBM Personal Computer, using the PC-DOS operating system based on Microsoft's MS-DOS, was the bandwagon everyone wanted to ride.

Like many successful products, MS-DOS was weighed down by obligations to its patron, IBM, and to its existing users. But Microsoft could afford to make haste slowly. Its Windows product, making it possible to run several MS-DOS tasks on one screen, is expected later this year.

Its main push is to make operating systems much easier to use. To do this, Microsoft makes use of pictures ("icons") from which the user chooses the function. A "mouse" controller is rolled along the desk to point the arrow to the appropriate place on the screen.

Microsoft has also concentrated on providing its own applications for the MS-DOS windows. Microsoft's Word, and its spreadsheet Multiplan, are now big revenue-earners in their own right.

Unsheltered by IBM, rivals such as VisiCorp and Digital Research had to be more nimble. Digital Research has been offering Concurrent CP/M for 18 months and VisiCorp's VisiOn multitasking environment for the IBM Personal Computer is well ahead of Windows.

While not tied to IBM's apron strings, Digital Research is well aware that IBM's Personal Computer under PC-DOS has swelled the ranks of sophisticated 16-bit applications, much as its own CP/M did for the earlier eight-bit machines.

It therefore adopted an "open door" policy, and in the latest version of Concurrent CP/M, Release 3.1, allows a mixture of operating systems and applications to run on the same screen.

In "PC-mode," one window can run an MS-DOS spread-

sheet, for example, while another runs a CP/M job—or another MS-DOS task, even another spreadsheet.

"It's purely a matter of what is most convenient for the user," said Mr Paul Bailey, who heads Digital Research in the UK. "People often need to switch tasks, and the application is still the most important aspect; the environment should, and does, come second."

Microsoft disputes that this enslaved MS-DOS is as advanced as its current versions, but the idea is undoubtedly a clever one. Now that IBM has fostered a generation of applications, other manufacturers can go gleaming, and offer users the best of both worlds.

Olivetti, Siemens, Honeywell and British manufacturer FTS are among the takers for Concurrent 3.1. The new version supports multiple-users as well as multiple tasks.

Multi-user systems demand more of the machine—and often of the user, too. Single-user systems can be single minded about the provision of a comfortable working environment for the user.

Multi-user operating systems share the processor between many users and have to cope with such complex tasks as managing machine resources, locking files and records so that simultaneous users don't muddle the data, and keeping

peace between priority tasks which fight for machine resources.

Because of all the engineering needed in multi-user operating systems, they tend to be a lot more powerful, but pay less heed to being easy to use.

In a multi-user system, the "desktop" computer ceases to be a strictly personal tool, and becomes part of a working environment, with people able to share data and files. This has advantages, with future expansion in mind, although the initial entry-price might look high next to the same number of single-user machines.

Alternative

Networking is an alternative where each user has a "personal" processor, but all are linked.

While there are multi-user "upgrades" of the smaller operating systems, most eyes in the industry are fixed on Unix, originally written by U.S. telecommunications giant AT & T, as the lingua-franca of multi-user systems. While portable, Unix comes in various forms and versions.

Microsoft sells a robust version called Xenix, much enhanced for commercial use, and is working hard to provide a compatible path from MS-DOS to Unix—two standards worlds

apart. Unix has its roots in research and science, and has been slow to adapt to its new commercial environment.

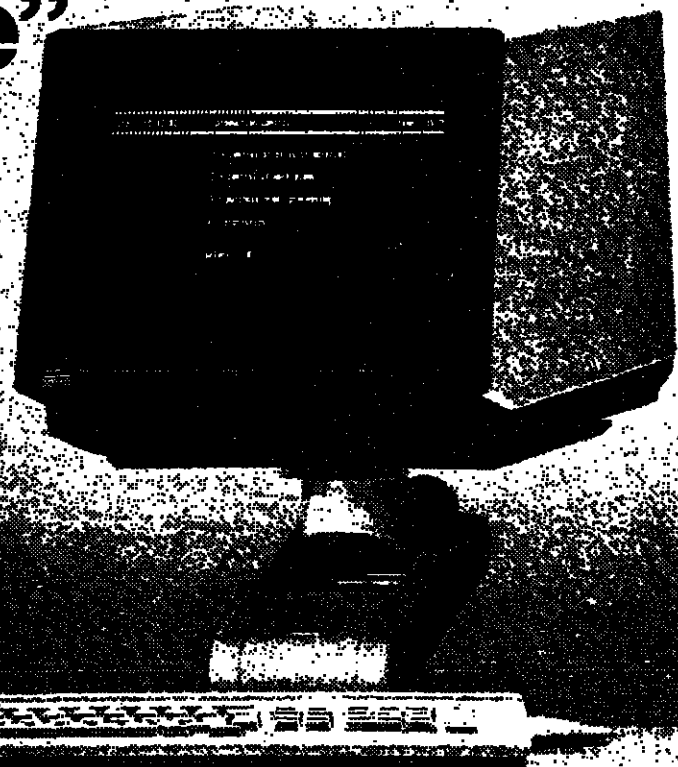
Manufacturers have adopted the system with enthusiasm, but it has taken some time for the software suppliers to catch up. However, Unix satisfies the need for a portable operating system, providing a common environment across different machines, and given time it will be standard.

It does not have the multi-user field to itself: another long-established multi-user operating system, Pick, is also becoming more popular. It may become complementary to Unix as it provides an inbuilt database and is easier to use, as well as fostering custom-built applications. These are areas in which Unix is still weak. Unix teamed with Pick would be an ideal solution.

Micro-mainframe links deserve a mention, as they provide a route (usually one-way traffic), between micro and mainframe. Using them demands some familiarity with the environment at both ends of the link, however.

In fact, the glaring thing that all the operating systems have in common is that, however "friendly," they demand more than a nodding acquaintance. So far no one has got around that problem.

"Technology always develops from the primitive, to the complicated, to the simple"



Computer technology exemplifies the rule. In the last thirty years, computers have evolved from huge primitive dinosaurs to compact, efficient tools. As yet, most of them are still complicated. But the process goes on.

From its beginnings, Nixdorf has worked to make computers simple. You see, we did not start at the mainframe end of the business and wend our way down to the workstation.

We started at the workstation, which places a high premium on simplicity, and worked our way up. So it should come as no surprise that Nixdorf has

built some things into its computers that most other computer companies are just beginning to recognize as being important.

Software that is friendly to the non-technical user.

For us at Nixdorf it was not enough to make our computers "user-friendly" in the broad sense of the word. We had to make them easy to use even by people intimidated by computers. And we did.

Most people who are introduced to a Nixdorf computer can begin to use it productively within a few hours.

Ergonomics.

We design our computers to be flexible to the human body, as well as the human mind. So our screens adjust to different people's heights. Screen colours are easy on the eye, to eliminate strain. Even our chairs and consoles are designed ergonomically, to fit the human need—not the computer's.

The goal is: simplicity. The easier computers are to use, the more they will be used, increasing productivity enormously. The modern world demands it. Nixdorf meets the demand.

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Hounslow, Middlesex TW3 3JB, England
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Telefon 052 51/50 61 30

NIXDORF
COMPUTER

THE DESK-TOP REVOLUTION 6

New software packages help users do their own microcomputer programming

Software 'stands between man and machine'

A SENIOR IBM technician once noted that "software stands between man and the machine." This has become increasingly evident since computers moved out of the air-conditioned computer rooms on to desk tops.

As more and more people are confronted with the wondrous machines, their inadequacies as tools show up with crystal clarity.

It is all very well to have the latest transportable, multi-user, all-purpose, twin-disk, super-micro sitting on your desk. But the burning question, once it is plugged in, is what to do with it.

Certainly, one route to salvation is to pay out a bit more cash and buy an appropriate software package to do the things you want to do. But very often the packages available do not cater for the specific task that you want to perform.

This inevitably means that a special program is required. Depending upon the complexity of the task there are two possible approaches to getting this special program. One involves hiring an expert to write it for you—and the other involves rolling your sleeves up and doing it yourself.

If computer programming is something that you have never contemplated before, it can be a daunting prospect. Fortunately, some enterprising software experts have recognised that not everyone wants to learn how to fiddle around with Basic or Cobol and have devised programming aids.

The theory is that you specify what you want to do and the aid will go off and do the programming bit for you. A glance through any of the computing magazines (of which there are plenty) will show a number of advertisements for products purporting to do just this.

It sounds simple. Find a product that will run on your microcomputer, sign a cheque for the sum required and wait for the disc/cassette to arrive.

Of course, the most things to do with computers it is far from simple and very often the product turns out to be a lot less than it seemed to be in the advertisement.

First of all, there is likely to be a large (and very often unreadable) manual that you will have to read and digest before you embark on your programme career.

Secondly, the product probably will not really do your programming for you—but merely build the "code." This highlights an important difference between "program-

ming" and "coding."

Programming is the business of defining a problem and devising a workable solution. Coding is the business of translating that solution into the notation that your microcomputer will understand.

All of the so-called "program generators" application generators, and the like will do the latter. So far, no one has managed to devise a product to actually make programs. This is the stuff of the Fifth Generation and, perhaps, one day maybe there will be a true program generator as a result of the enormous research effort being expended in this area.

For the time being, we shall have to be content with ways of making the process easier.

This is the main area where the program generator can help. But remember that programming is something that has yet to be successfully automated.

Given this gap between what the suppliers seem to claim and what they actually offer, there is still plenty of scope for what is called "end-user programming." The term end-user is computer industry jargon for the person who has to live with the system and make it work.

Many of the generator products around do help end-users to build their own systems with some constraints.

The constraints come from the simple fact that if a tool is made easy to use then it inevitably suffers from a lack of power.

In fact ease-of-use usually comes about as a result of restricting the options available to the user—in much the same way that a simple camera is easy to use because it does not allow the "user" to control every aspect of its operation.

Restrictions

So programming aids are usually restricted to one area of endeavour—the major one being to handle the problems of maintaining and presenting the data in a database or filing system.

As one of the major applications for microcomputers is to keep personal files it is no surprise that this should be a well populated area for such aids.

Query languages, as they are called, have been around for some time on larger machines and are often included as part of a database product. A typical example of the use of a query language would be to search through a customer database to obtain a list of outstanding creditors.

IBM has been working hard on the query language problem for some years and has devised a number of products to help in this area.

Its "Query by Example" program is a case in point and enables users to ask questions

in something resembling English.

If all you want to do is to produce reports or display screens of database information, then this sort of thing is fine.

Similar features are built into products for microcomputers around database systems such as Ashton Tate's dBase II.

Autocode from Stemmox in London and Quickcode from Fox and Geller provide for querying this database product, as well as allowing updating of the database. Both of these products will run under either CP/M or MS/DOS, and cost around £200.

One of the most famous applications generators is a product called "The Last One," supposedly "the last program you will ever need." Going between £100 and £500, depending upon the machine, this goes somewhat further than just being a means of maintaining and handling files of data.

The emphasis is still on the handling and the product is best suited to commercial applications.

A recent trend in software for microcomputers is the emergence of the so-called integrated package. The best selling Lotus 1-2-3 product which includes a database, a spreadsheet and a graphics presentation module is the leading example.

These products get around the problem of programming in a different way by offering a set of general purpose tools that can "talk" to each other.

A user can perform some manipulation on figures from the database using the spreadsheet program and then display them using the graphics features.

Judging by the success of this type of package, this could be the way that most people will do their "programming" in the future.

Instead of building a set of programs to do specific jobs, they will use these tools to do their work.

Already, these products are being extended to include word processing and links to main-frame systems to access corporate data.

Eventually, they will probably include features that will enable sophisticated manipulation of databases along the lines of the expert systems talked about in the context of Fifth Generation computing.

Then, perhaps, we shall see computer systems that can take on a lot more of the burden of programming than at present. In the meantime a couple of recently published books on program generators may be of help.

Chris Naylor's book, *Programs that Write Programs* (Sigma Technical Press) is an introduction to the subject for micro-computer-users and contains a number of reviews of current generator products.

The National Computing Centre has also published what it calls a state of the art survey on *Applications Programs Generators*, which is aimed more at larger computer users but does contain some details of products for micro-computers. Both books are distributed through John Wiley.

The latter book reveals some interesting figures on the usage of applications generators. A survey of some 33 organisations which acquired a generator product shows that after purchasing it nearly 60 per cent of their programs were created using the generator.

USAGE OF PROGRAM GENERATORS

Development method	Based on replies from 33 organisations surveyed by the NCC	
	Before acquiring generator	After acquiring generator
	%	%
High level language	81	49
Program generator	0	58
Other methods (external software house, packages)	19	2
	100	100

Source: National Computing Centre

Substantial developments in digital facsimile systems

Benefits of more rapid data flow

THE CONCEPT of facsimile has been around since 1844, when Alexander Bain carried out the original work. But it has only been the last 12 to 15 years that facsimile has been developed for day-to-day office use.

The newspaper industry was the pioneer of facsimile for the transmission of photographs and articles from distant locations to printers from the 1930s.

Today, equipment manufacturers are trying to increase its use in business. It has to compete with tele-long established in commerce and industry.

Manufacturing is now dominated by Japanese manufacturers. Indeed it has been Japan and the Far East where technological development and use have been the most rapid.

At present the world total for facsimile equipment is less than 1m units. This is split between 450,000 in Japan, 500,000 in the U.S. and 85,000 in Western Europe.

Britain accounted for 25 per cent of the West Europe market in 1983 where there are 14 suppliers. Growth is between 20 and 30 per cent in the UK. Among the competitors are Canon, NEC, Panasonic and Toshiba from Japan, Multitech, SMI, Fleming, Interscan, STV, Infotec, Rank Xerox and Siemens.

Some of these suppliers do not make their own equipment. Canon, recognising the potential of facsimile, transferred the market less than two years ago and has already made inroads into the UK market.

The principle behind early analogue facsimile machines was extremely simple. The text to be transmitted is wrapped around a drum which spins. As it does so an arm which contains a photocell scans the drum.

This detects black (letters) and white (spaces) areas. These are converted into an electrical signal which can be sent down the telephone line.

At the other end, the reverse happens and the electrical signal is used to transfer the text to a second drum. The text is then printed out.

Facsimile equipment has now improved dramatically and some systems have done away with spinning drums and use linear scanning. Instead, electronic controls have dramatically reduced the time of transmission. This has been achieved by a technique called data-compression which simply codes the information during scanning so that it does not transmit the white spaces which, after all, contain no information.

At the other end of the line the receiver reconstructs the spaces, according to the code. The evolution in facsimile has led to three classes of

equipment collected into groups according to their speed of transmission. Group 1, which takes six minutes to send a single sheet of A4 paper, is not manufactured anymore and is virtually obsolete. Also this group is incompatible with more modern Group 2 which takes half the time to transmit and Group 3 which is a sub one minute per page.

The benefit of faster transmission is not just time it is considerable savings in telephone costs especially international calls. Along with the sub-minute transmission, which can be as fast as 15 seconds—is more compact desktop models.

On the horizon is an even faster Group 4, now the subject of discussion with the British Facsimile Industry Consultative Committee, BFICC, the facsimile industry body and the CCITT, the international organisation which sets telecommunications standards.

BFICC was formed in 1972, following the Group 1 standard from CCITT which several makers found that although they complied with the standard, they could not properly communicate with other suppliers' machines.

Now they work closely together to ensure that standards are universal. Manufacturers, however, are unlikely to introduce Group 4 equipment for at least two years in order to exploit the existing markets for Groups 2 and 3.

Group 4 will be a completely digital machine both for scanning and transmission unlike today's analogue methods of signal communications. Neither will it be compatible with Group 2 or 3.

Makers of facsimile admit that there is a need for strong reasons to persuade the advantages of facsimile compared with telex, for example. Letters and reports do not have to be transmitted before transmission so reducing errors.

It can handle photographs, sketches and diagrams. No specialist skills are required and facsimile can transmit drawings, sketches and special layouts.

Some machines offer enlargements and reduction in size of transmitted copy. It can even act as a photocopier and the Group 5 machines bear a strong resemblance to them. As well as thermal printers, facsimile uses ink-jet, electro-static and electro-sensitive printing.

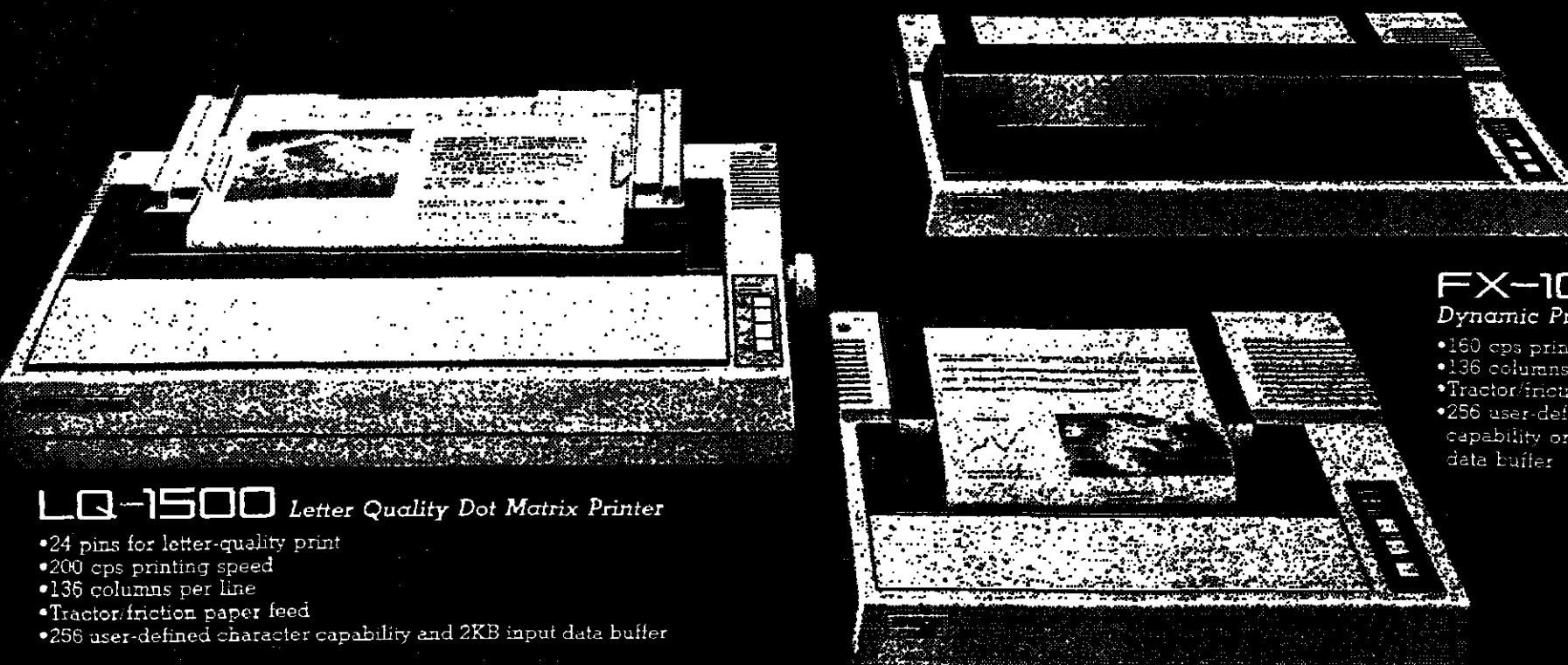
Perhaps the acknowledged fact that facsimile is becoming more important was marked by the publication for the first time of a facsimile directory by British Telecom.

Elaine Williams

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- 256 user-defined character capability or 2KB input data buffer

FX-100

Dynamic Printer

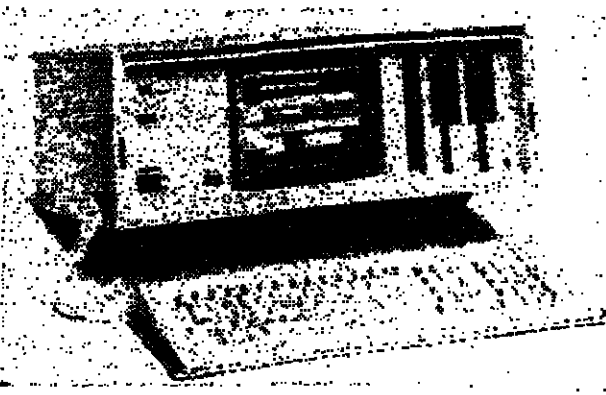
- 160 cps printing speed
- 136 columns per line
- Tractor/friction paper feed
- 256 user-defined character capability or 2KB input data buffer

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THE DESK-TOP REVOLUTION 7



Above: example of the Microsoft Multiplan for Apple Macintosh. All spreadsheet and financial planning products cite ease-of-use as a key factor. Centre: Mr David Fraser, Microsoft's general manager



Graphics play an increasing part in making software more accessible. Graphs and charts can be made in minutes with the new Graphox Dabplot Plus program on Philips portable P2000C computer, above.

A proliferation of spreadsheet packages reveals the most important need for many years

Getting a grip on financial planning

MORE THAN 70 per cent of the IBM Personal Computers already sold have been bought to run one program, a spreadsheet called Lotus 1-2-3. This is not just an indication that the software suppliers are in firm control of the market these days. It also means there are a lot of people out there running spreadsheet packages because they really need to do so.

Lotus has become the star, through shrewd marketing and timing, but there are so many others that charting them all is impossible. Comshare offers an entire range of financial systems, Microsoft's Multiplan is doing well, and any software directory will yield a score of other well-known names.

It is very noticeable that advertisements grasp on financial planning as the most "visible" area of personal computing. One of the reasons for this is the quick turnaround offered by having a micro on the desk, instead of waiting days for the answer from the mainframe. Another reason is the change of emphasis in traditional accounting towards examining cash-flow.

Information and decisions are needed at speed, and it becomes vital to optimise by playing with various possibilities and judging their effect on the financial model.

The transition of the micro-computer from the hobbyist into the business environment had a lot to do with the Visicalc spreadsheet, one of the earlier and most successful micro applications.

So the spreadsheet history is strong, and the developers have had a long time to get close to their users and find out what they want. They start with an advantage.

By Claire Gooding

The people using them are likely to be more than familiar with the concepts used by the programs, and also proficient in using a numeric keypad.

All the spreadsheet and financial planning products cite ease of use as a prime factor. Lotus deserves its popularity, if only for the effort its developers put into making the minimum of keystrokes work to the maximum effect.

In effect, the spreadsheet has been the foot in the door for other applications. At the moment it appears to be the only application taken seriously, demoting the micro-computer from the all-purpose companion into a glorified—albeit remarkably clever—programmable desk calculator.

The software suppliers are ready and willing to extend the executive user's relationship

with his computer to include other office functions. But it appears that they are more ready for the users than the users are ready for them.

The ideal picture painted by suppliers, such as Peachtree and Microsoft, is one where all office software comes from one supplier, who peddles word processing, budget programs, payroll, or accounting as well as the all-important spreadsheet.

Certainly, office software is available, along with diaries, mail, time management and all the extras—London software house Graffcom has just released one such suite.

But there is little proof that executives are anxious to get to grips with word processing, though it is invaluable in its place (i.e. the secretary's desk, not the executive's). It is still easier to call in the secretary and dictate a letter.

Cryptic

For, spreadsheets apart, executives are wary of the keyboard. Numbers may be as easy as 1, 2, 3, but it takes a long time to find a, b, c if not acquainted with the vagaries of the QWERTY keyboard.

If finding the right keys to press takes concentration, what hope is there of getting to grips with the input needed to run an application, and even more daunting, the cryptic commands used by most operating systems.

Even the gimmicks, such as the "mouse" pointer, which moves a cursor on the screen using a remote joystick, and

the touch-screen systems go only part of the way. There is no getting away from the keyboard when developing new applications and entering data, though it might be easy to run them at the mere cost of an aching arm and a grubby screen.

Graphics have been playing an increasing part in making software more accessible, and are now often incorporated into financial planning tools.

Creeping up behind spreadsheets and word processing in popularity is the database. People are increasingly concerned with sharing the same data, to avoid duplicating the effort of constantly entering data from one system onto another.

The database is a technique taken straight from the "adult" data processing world. To use a database effectively a user must have a firm grip on its principles and terminology.

How many executives want to know what a field is, or have the time to learn?

They are much more likely to abandon the whole complex process to the experienced programmer, and stick to the piles of paper. (Not that computers produce a paperless office in any case—you just have less room for it all on the desk.)

Best-known among the micro databases is Ashton Tate's dBase II, definitely not a novice tool.

Rivals have improved functions, power, and user-interface in an attempt to overtake dBase II. They include Condor, supplied by MOM of Aberdeen, the Sensible Solution from O'Han-

lon, FMS-80, and various British contenders such as Comshare's DMS, Microcomputer Business Systems' Resene, and South-data's Superfile.

These systems verge upon "applications generators": systems which can produce programs to the users' own specifications without expecting them to code.

They do, however, have to know how to analyse their business requirements in computer terms, enough to daunt the most determined novice.

The increase of "integrated" office systems is linked with the advent of more sophisticated operating environments.

Again, these give more power but demand more knowledge, and it's knowledge the average executive can't be bothered to acquire. A Microsoft spokesman summed it up like this:

"The industry has deluded itself in the transition between micro and mini. The end-user has got used to dedicated systems like word processing, but now that one machine can do many jobs, it's taking a while for people to catch up. Machine capabilities are way beyond user capabilities, and using these systems means extensive training."

Mr Paul Bailey, of Microsoft's opposite number, Digital Research, shares the suspicion that the industry is ahead of its users—and even itself—"there's an enormous culture gap," he says. "Basically, all these things take some time to learn to use. And the computer industry is very laggard about using its own technology."

Philip Manchester on micro-mainframe links

A need for the network

THE PERSONAL computer has opened up a number of possibilities for applying computing to office work. Small computers with software packages to do word processing, filing and calculating bring unprecedented power to the desk top.

But is a personal computer in isolation as useful as it could be? Separated from the corporate information flow, its use is limited to those tasks that are entirely personal with no prospect of fully utilising its powers to the full. The latest message that is being spread by hardware and software suppliers of all shapes and sizes is that personal computers should be plugged in to the corporate network.

In this way they can take advantage of other applications including electronic mail and access to corporate data. Furthermore, the extra power that large corporate mainframe computers offer, can be used to perform tasks that would be unthinkable on the much smaller and less powerful micro. In effect, the personal computer can be turned into a formidable terminal realising the promise of so-called distributed processing.

A number of different approaches to the problem of hooking the personal computer to the mainframe are being tried. IBM, for example, is working towards incorporating the personal computer into its overall strategy for setting up distributed computing. Even when the IBM PC was first announced it included features that let it appear like a standard IBM terminal—the 3270. Since then further announcements of both software and hardware have extended these features.

Last autumn saw announcements in the U.S. that can make the IBM PC/XT the larger IBM mainframe terminal—the 3270. Since then further announcements of both software and hardware have extended these features.

In effect it means that the same program can run on all of IBM's mainstream machines from the very smallest (the PC/XT) to the very largest.

Where IBM leads, others inevitably follow and the group of large software houses surrounding IBM, the independent software suppliers, have all

brought out products that take advantage of this link between micro and mainframe.

Other software companies have adopted a more general approach. A new breed of software product called a protocol emulator has been growing in popularity over the past couple of years.

Communications between computers are controlled using what are called communications protocols and a number of these are approved as international standards. Others, such as the one governing the IBM 3270 terminal have become "de facto" industry standards.

The emulator program sits inside a microcomputer and pretends that it is one of these standard terminals. The ACT Sirius has been a popular choice as a vehicle for this sort of product, and enables a Sirius user to link up with mainframes from a number of manufacturers.

Tasks

The user is still able to make use of the microcomputer for all of the normal tasks but at the same time can send and receive messages and data from the mainframe.

A number of companies have produced products of this type. VHA Computer Services of Leeds and Network Designers of Oxford have emulators that can talk to ICL mainframes. Software Components specialises in 3270 emulation and Xerox Computing and Zenith Plan both provide products to emulate the Digital Equipment (DEC) VT100 terminal. MicroProducts Software includes a mainframe link in its operating system software EOS and the firm's marketing manager has strong views on the importance of linking personal computers to the corporate database.

"Users do not want to spend hours keying in data to spreadsheet programs when they can get it from an existing database," notes Neil Flynn of MPSP. "The mainframe link is very important."

The idea of abstracting data from mainframe databases for personal use is an important part of the networking strategies of the major manufacturers.

IBM has laid the ground for this with its recent announcements in the database area. For some time it has been working on a simpler approach to database with its so-called "rela-

tional" database system culminating in the launch of a product called SQL. The relational approach views data as if it were a series of two-dimensional tables—much the same as the standard spreadsheet or Visicalc form. Instead of a rigid structure being applied to data according to how it has been organised in the computer, it allows the user a high degree of freedom.

It is based on the idea that every user has a different view of the same data. It is one of the main justifications for the development of micro/mainframe links and means that every user can have a "personal" database derived from the same central pool of data administered by the mainframe. It also allows for data to be sent back to the mainframe from the microcomputer.

A typical scenario would be for a number of managers to abstract budgeting information from the mainframe database, pull it down the communications link to their personal computers, process it using a spreadsheet and send it back to the mainframe. Senior management could then take the consolidated budget information and go through the same process to arrive at an overall budget.

At a more esoteric level, the linking of personal computers to mainframes also opens the door to electronic mail and what is being called the electronic diary.

The software development company, Microfocus, has set up an experimental system in its new offices in Swindon linking a number of IBM Personal Computers together with an IBM mainframe. Early reports suggest that the electronic mail part of the system is proving extremely useful.

The electronic diary enables meetings and conferences to be set up through the network without the usual deluge of phone calls. Each manager keeps a diary on his or her personal computer that may be viewed by other managers so that meetings can be arranged to everyone's convenience.

How this will work in practice and how it will change people's methods of working remains to be seen.

But there can be no doubt that the micro mainframe link will be the "glue" that keeps the networked corporation of the future together.

You and the Compaq could go far!

The Compaq runs all the popular programs written for the IBM Personal Computer and works with the same printers and other peripherals.

There's really only one big difference. The Compaq Computer is designed to travel.

Carry the Compaq Computer from office to office. Carry it home at the weekend. Or take it on business trips.

If your company already uses the IBM PC, add the Compaq Portable as a mobile unit that can use the same programs, the same data disks, and even the same user manuals.

With most other portables you'd probably need to buy an additional display

screen because the built-in screen is too small for certain tasks, like word processing, but not with the Compaq.

The Compaq Computer is the first uncompromising portable computer. It delivers all the advantages of portability without trading off any computing power capability.

After all, the first truly portable computer which is also totally compatible with the IBM PC must be destined for great heights. Already a proven winner in the USA, it is now available to you from the UK's premier vendor of micro computers — PCL.

Lotus 1-2-3 — the great What If?

Add to your Compaq Lotus 1-2-3 and you have the most remarkable hardware/software combination yet produced for financial management. It contains spreadsheet, information management, and graphics all in one package.

Use this software either on your existing IBM PC's or on a new Compaq and you will transform the financial thinking of your organisation.

The answer to What If? is as easy as 1-2-3.

Planning Consultancy Lead with Compaq

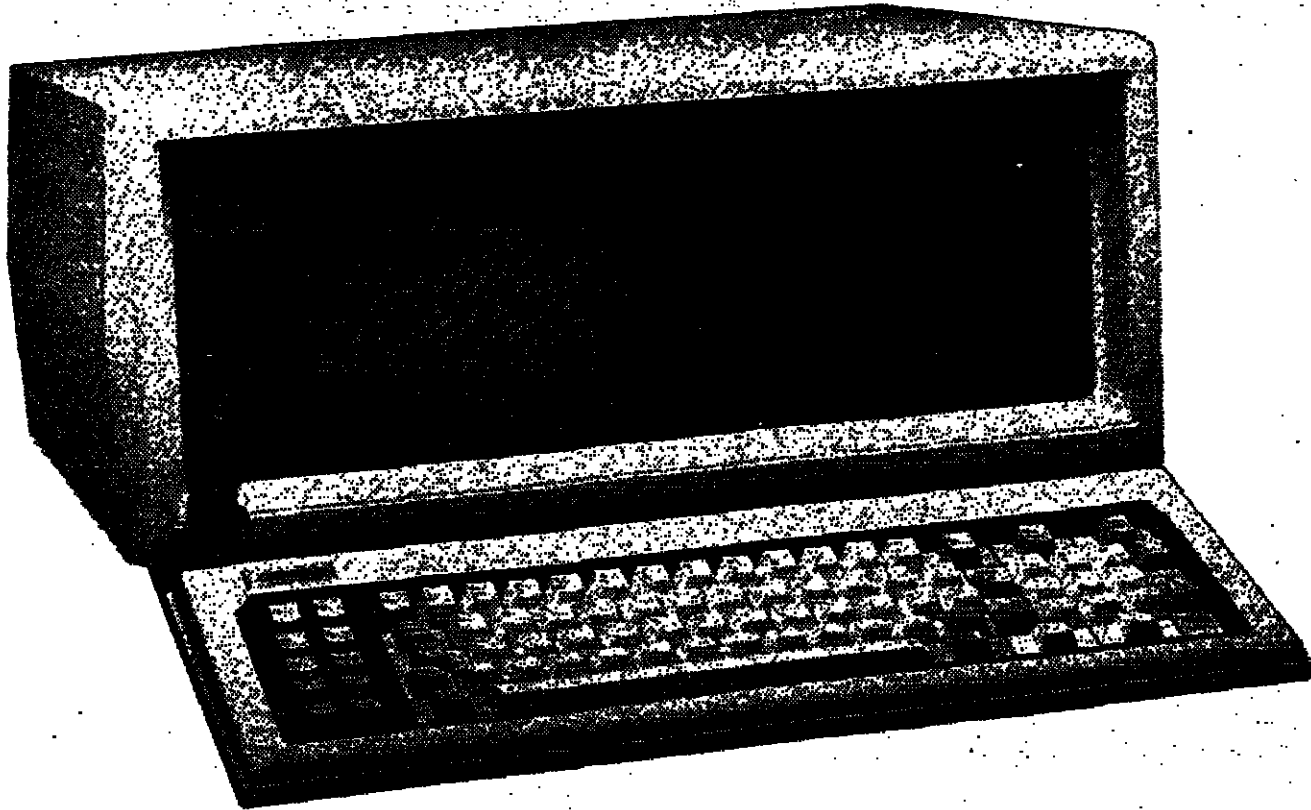
At PCL we not only supply hardware but software and training too. We lead you through every step from planning and purchasing to operator training. We take just as much interest in your needs after we have sold you a personal computer as before. We are innovators and are constantly providing products and services to meet the demands of corporate end users.

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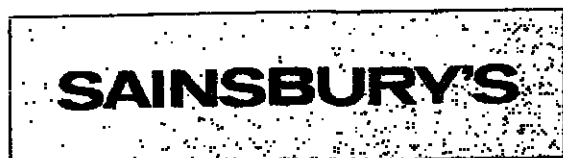
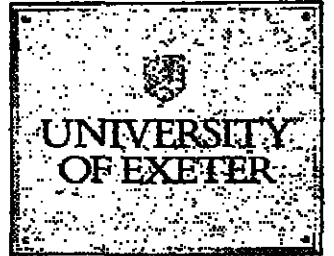
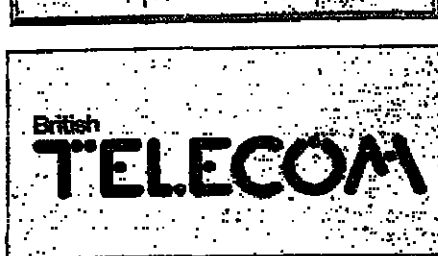
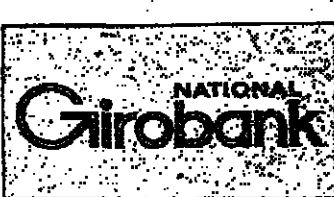
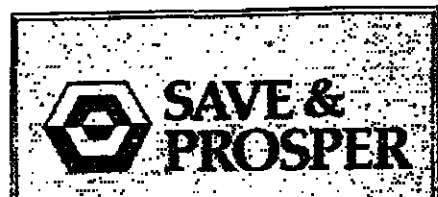
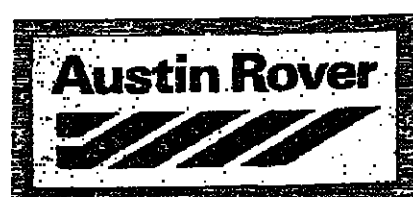
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THE DESK-TOP REVOLUTION 8

EXTEL 'EXAMINER' FACILITY

New computer-based financial service

THE FIRST commercial installation of the Extel Examiner, a newly developed computer-based business and financial information service available from the financial services division of the Exchange Telegraph company, is in operation at The Flying Club, British Midland Airways' new lounge at London's Heathrow Airport.

Examiner provides City, UK and international financial news in visual display form as it happens continuously throughout the day, using a 16-key pad which is similar to the remote control pad of a domestic television set.

Based on the Extel financial news service, the three main features are:

1. Interrogation—where up to 400 items of stored information can be quickly

searched for and retrieved (this represents news of the previous 13 to 24 days). A headline newflash is featured at the bottom of every page precluding the possibility of missing a vital current news item when scrolling previous information.

2. Broadcast—where all the latest news can be viewed without the need to take any special action such as pressing buttons.

3. Dynamic Index—where an index of news items is built up as stories are received.

Share prices are not screened continuously by Examiner but are covered with a report such as the hourly Stock Exchange market reports. Share prices are, however, available on Extel's Priceline service.



"Examiner" installed at London's Heathrow airport

Examiner, which can be supplied to all parts of the UK, is one of the most economical financial information services available where multiple terminals are required. Subscription to the service includes communications and maintenance costs.

The new service is expected to prove a marked benefit to a wide range of businessmen and investors, including brokers, jobbers, investors, fund managers, company directors and the media.

Developments in local area networks

A crucial period ahead

LATE LAST year there was a flurry of publishing activity from IBM about a facet of office automation where it had been notoriously non-committal—local area networking, the art of linking all the electronic devices which constitute the office of the future in a cheap and effective manner.

Local area networks, or LANs, are the glue which holds the electronic office together, yet IBM refused to give any clue to the kind of system that should become standard.

Then its scientific review, IBM Research Highlights, devoted an issue to an article entitled "IBM Zurich—Local Area Network (LAN) Prototype." At the same time it published a "Technical Overview of a Token-Ring Local Area Network."

Then the IBM Journal of Research and Development featured, on the cover of its September issue, an article to highlight an article entitled: "A Local Communications Network Based on Interconnected Token-Access Rings: A Tutorial."

Well, when "Big Blue" gives tutorials it behoves the rest of the world to take note. So far there have been no formal announcements, but coupled with the rash of personal computer based products for the office IBM has announced in the past few months, it cannot be long before it announces a local area network—and it is likely to be of a token-passing ring structure.

Why are LANs important? There are three principal reasons: 1. First, the method used for connecting together, say, a network of personal computers so they can pass information to one another has got to be inexpensive in relation to the cost of the computers.

If a personal computer functioning as an executive workstation costs, say, \$3,000, an office manager would find it twice before paying a further \$1,500 per station to attach them to a LAN.

Second, they must function reliably at high speed. There would be no advantage in transferring files between office workstations or in feeding files to a printer if they travelled slower than the (manual) internal mail or if the level of errors was unacceptably high.

Third, the physical method of connection—the actual wiring—must be compatible with the fabric of the building in which it is being laid.

The Oxford study published last year, showed that most, if not all existing office buildings are poorly suited to take all the electronic gadgetry and wiring that the office of the future demands. LANs, computers are connected to their terminals by flat ribbon cables of considerable bulk and of a specified length.

Popular

One of the most popular methods of building LANs involves coaxial cabling—a solid copper core wrapped round with copper insulation. Again, this is bulky, inflexible stuff, difficult to weave into the fabric of new buildings with proper ducting, virtually impossible to fit into older buildings without causing substantial disruption.

In the short-term, a number of companies have developed LANs based on existing telephone wiring. Computer and Systems Engineering and Microm-Bor, both in the UK, have developed networking systems which allow both voice and data to be transmitted, along the wires to the telephone handset. Neither as powerful, nor as comprehensive as major LAN systems, these provide a low-cost and effective solution for many users.

So how can a LAN be defined? According to Dennis Longley and Michael Shain in The Microcomputer Users Handbook 1984 (Macmillan Reference and Paperbacks) a LAN is a "High speed communications system operating over a relatively small geographic area with between 100m and 10 km of cabling."

"Data is transferred at speeds of one million bits (individual data units) a second

BY ALAN CAINE

upwards with a single LAN interconnecting as many as 100 or more computer systems.

Coupled with this high data rate is a very low error rate, typically equivalent to one incorrect bit in one thousand million bits of transferred data."

This definition is pretty comprehensive: what options are available to the customer? One of the earliest implementations of a successful LAN was Ethernet, developed at Xerox Corporation Palo Alto research group.

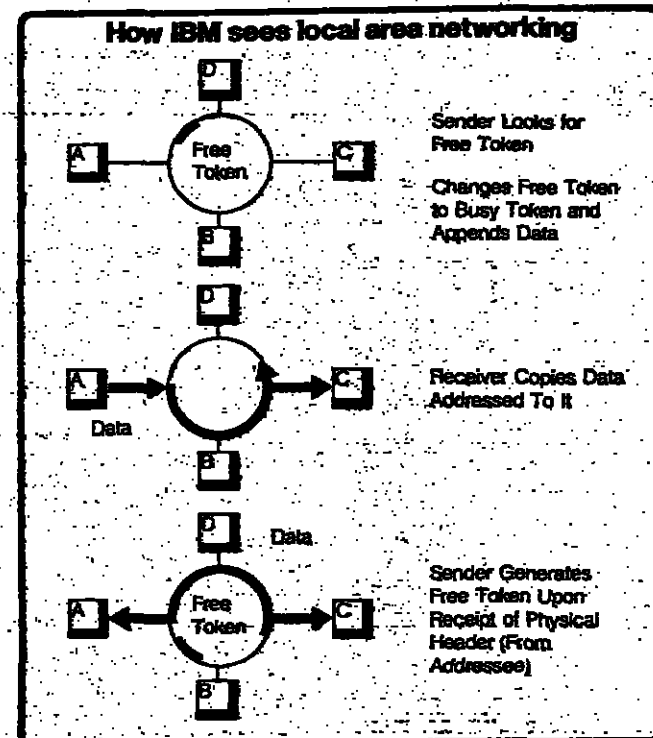
Ethernet is described as "baseband" the stream of bits constituting the message in transit is not modulated. The comparison here is with "broadband" where frequency modulation techniques are used—for example, Wangnet.

The advantage of broadband LAN technology is that a number of different messages representing data, voice and video pictures can be carried through the network simultaneously.

Control

The next question is control of access to the network: what sort of "policeman" should be employed to ensure that only one workstation can send messages at one time and that messages do not crash into one another.

Ethernet uses an important technique called Carrier Sense Multiple Access with Collision Detection (CSMA/CD) in which each workstation "listens" to see if there is activity on the network. If there is, they stay silent; if not they are allowed to transmit. If two messages



collide, both transmitting stations stay silent for an arbitrary period before trying again; by the laws of chance, one station will eventually control the network.

Other systems include central computer control or token passing where messages holding a "token" have right of way on the system.

Structurally, the network can be a "bus", a single channel to which the workstations are attached, a star where each workstation is attached separately to a central control point or a ring where the message travels from one workstation to the next in sequence being regenerated at each node.

So far, Xerox's view of the LAN has tended to take the lion's share of the publicity chiefly because of its early start, and because many other companies were prepared to license the technology from it. Indeed, Digital Equipment Corporation (DEC) and Intel, the microchip manufacturer, are partners with Xerox in developing the system.

The entry of IBM into the LAN business will inevitably upset the balance as it is worth looking in some detail at what its research group has put forward.

It is proposing a baseband system in which access control is achieved by passing a "token" around a ring. Each station has an adaptor that detects the signals generated by the preceding station, captures them and regenerates the data, before transmitting them to the next station—a fast and effective method of detecting and isolating errors.

IBM argues that the ring structure is well suited to optical fibre cabling—which, being thinner and less rigid than copper, offers advantages in wiring awkward offices.

It claims advantages for token passing in the elimination of central control while enabling the designer to predict the average and worst case performance of the ring. Baseband systems, it says, offer the greatest potential for lower cost.

LANs have moved quickly from laboratory curiosity to commercial electronic glue. The next few months should determine who is going to set the pace for the future.

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THE DESK-TOP REVOLUTION 9

A look at the latest developments, from magnetic storage devices to laser-optical storage systems

Cost is the key in the storage systems battle

THE DEMAND is growing for systems that will store and display more information at the desk top, at less cost.

Predicasts* stated recently that the market for magnetic storage devices expanded at 18 per cent annually in the decade from 1972, reaching \$9.6bn in 1991 in the U.S. alone. The world figure can hardly be less than \$30bn.

There is also much interest in laser-optical storage systems—disc, card and more recently tape (from the Dutch company Docdata for example) but although the potential is enormous, announced applications are rare.

The small Winchester disc drive, a rigid, fixed alternative to the floppy, will, according to Predicasts, outsell its bigger 14 inch brother by 1985 but floppy disc drive sales will grow at 29 per cent per annum through the mid-80s, to top \$4bn in the U.S. by 1985.

Floppy disc diameters have dropped from eight inches to under 3.5 inches, but the intermediate size, 5.25 inches, is expected to predominate for the time being.

Cost is the key. The trend is indicated by a recent announcement from Singart, market leader in small disc stores, of a 3.5 inch double-sided floppy drive that can hold about 1,000 pages of text per disc and costs \$200 in OEM quantities.

These tiny discs have a hard plastic shell, encase rather than cardboard and are more robust and precise. Sony, Dysan, Hitachi and IBM offer similar units.

The Winchester disc has built a strong challenge to the floppy

is cheap and text or graphics frames are nowadays retrieved in perhaps 10 to 20 seconds with computer-assisted indexing. Kodak, Bell and Howell, 3M and Intec are typical suppliers.

But the information kept usually remains unchanged for fairly long periods, if not indefinitely. Although alterable microfilm exists, updating usually involves making new frames.

Fiche (a postcard-sized piece of film with perhaps 100 frames on 10 or 16 mm roll film) is sent through the mail to those needing the data. Distribution is not expensive.

There is also COM (computer output on microfilm), an automatic, direct conversion of computer data to human-readable microfilm frames. The technique is to photograph a cathode ray tube face on which the text has been displayed.

The arrival of the optical disc, however, is making some waves in the microfilm business and systems to convert back and forth between electronic storage and film have appeared.

All the new optical systems researched by Drexon, Kodak, Matsushita, Philips (Megadisc), RCA, Singart (Kerex), Sony, Thomson-CSF, and Toshiba have been made possible by the laser.

An extremely small spot of very intense light is switched on and off to modify the surface of a moving material to make microscopic pits, bumps or other effects that change the reflectivity at those points.

These tiny on-off changes represent data bits and are read back

by another, lower intensity laser beam and a photodetector.

One system, made public in March, is at the U.S. Library of Congress where 100 Thomson-CSF discs in a data "joke box" can hold 2.5m A4 documents in digitised form.

Developed by Integrated Automation in the U.S., the system can access any document in no more than 10 to 15 seconds. It is available in the UK from Data Logic.

Storage cost is about one U.S. cent for 30 pages. The system can easily cost film, but this may not matter where many terminal users in large organisations must access many different documents, quickly and at their desks.

High density

These systems have an extremely high recording density, exceeded at the moment only by silver halide film. Very roughly, the figures at the moment are 10m bits per square inch for magnetic, 100m for optical and 1bn for film (the bit equivalent of the microscopic visible text).

However, magnetic and silver halides are quite fully exploited, whereas optical techniques are still young.

The magnetic media researchers are fighting back with "vertical" recording. Instead of making magnetic marks along the line of recording, they are made at right angles to the tape surface. This is rather like stacking luggage on end on airport conveyors instead of laying it flat—more can be accommodated.

Only last month NEC said it had developed suitable material made by plating an alloy containing cobalt, nickel, rhodium and phosphorus. The recording density is claimed to be 10 times that of conventional oxides. BASF and the other media makers are conducting similar research.

The fact remains, however, that the claimed optical memory costs, between 0.0001 and 0.00001 cents per bit, are already less than magnetic and seem likely to drop further.

At such "micro-cent per bit" levels, the fact that most optical systems have no erasure hardly matters. The new, modified record segment is simply added and the old one ignored.

For legally oriented recording (banks, for example), non-erasable yields a permanent audit trail. However, erasable systems have been developed by NHK and Matsushita and sample quantities are expected soon.

Financial institutions want no numerical errors, which

means some optical offerings would be found wanting with error rates in the one per 1m bits region. But for images and text, this is generally acceptable.

Such cheap, electronically compatible data storage offers exciting possibilities for the presentation at high speed, in colour, of any kind of text, data or image on a desk-top screen.

The user-terminal would go on-line after "capturing" an image, making it immediately

available to anyone else—which paper records cannot do.

However, the fact that the whole of Encyclopedia Britannica will go on one disc needs to be tempered with reality.

Optical systems are expensive, and after all, about 75 per cent of British companies have turnovers of less than £100,000 a year. There is hope for paper yet.

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Elaine Williams looks at the problems of complete integration

Voice and data links move nearer

SENIOR managers spend a great deal of time talking on the telephone—some estimates are that about 15 per cent of the time is spent in telephone conversations in the working day. Only meetings take more of an executive's day.

Even when personal computers adorn every senior manager's desk, they will still need to communicate. Some industry observers see the executive's desk as the major battleground of office automation, and the telephone will be the winning weapon.

Many office systems manufacturers have formed joint ventures with private automatic branch exchange (PABX) suppliers. For example, ICL has joined with the Canadian communications company, Mitel, IBM with Rolm, and Xerox with Siemens.

Other corporations, such as Ericsson in Sweden, already have both office automation and communications products.

These companies are paving the way for the day when both voice and data share the same digital network—voice and data are then integrated. Data comes in many forms: electronic mail, computer talk, and information systems, such as videotext. There are few ex-

amples of this. Today it is possible to send data and voice but not without sacrifices on either side.

The reason why companies are so keen to introduce such communications is based on several factors. One is economy, as it means that a company will need only one network to handle its communications.

Another reason is the lack of keyboard skills, especially in Europe, among senior managers. A more sophisticated telephone is not as daunting as a fully-fledged computer.

Analogue form

In order to send data over the telephone speech circuits means that the speed at which digital information is transmitted must be slowed down. This is because voice communication does not need a very high bandwidth—space—in order to be transmitted while data requires a large frequency range.

Also, much of voice transmission is done in an analogue form—this means that the variations in tone and loudness is directly mirrored by the electrical signal which is sent down the telephone line.

Data, on the other hand, is in the form of digital pulses—either a signal is there, or it is

not. When data is transmitted over voice circuits then the digital pulses have to be turned into the analogue signals used for voice. Usually on-off signals are transformed into two frequencies using a modem (modulator/demodulator).

Voice signals transmitted on a data circuit must be similarly digitally-encoded, using a device called a codec. In the electronic office it is envisaged that voice messages stored in digital form can be transmitted to a workstation in the same way that text messages are stored for transmission in existing systems.

What is clear is that an integrated network capable of carrying voice and data must have sufficient bandwidth to cope with both. It is also certain that any network will be totally digital in nature, as most of the world's telecommunications equipment manufacturers are deeply involved in this technology. All modern telephone exchanges have computers at the heart of their design.

There are several large capacity data links offered which could form the basis of a digital data network. For example, British Telecom offers Kilo-stream and Megastream. Any future public integrated service will need to have a defined standard so that all manufacturers' equipment is

compatible. These companies which already have integrated their communications have tended to opt for their own standards.

Many PABX manufacturers have stated, when launching digital exchanges that future expansion of their products will allow data to be transmitted alongside voice. Some criticism has been made that futuristic features sometimes offered in reality are a pale shadow of the promises.

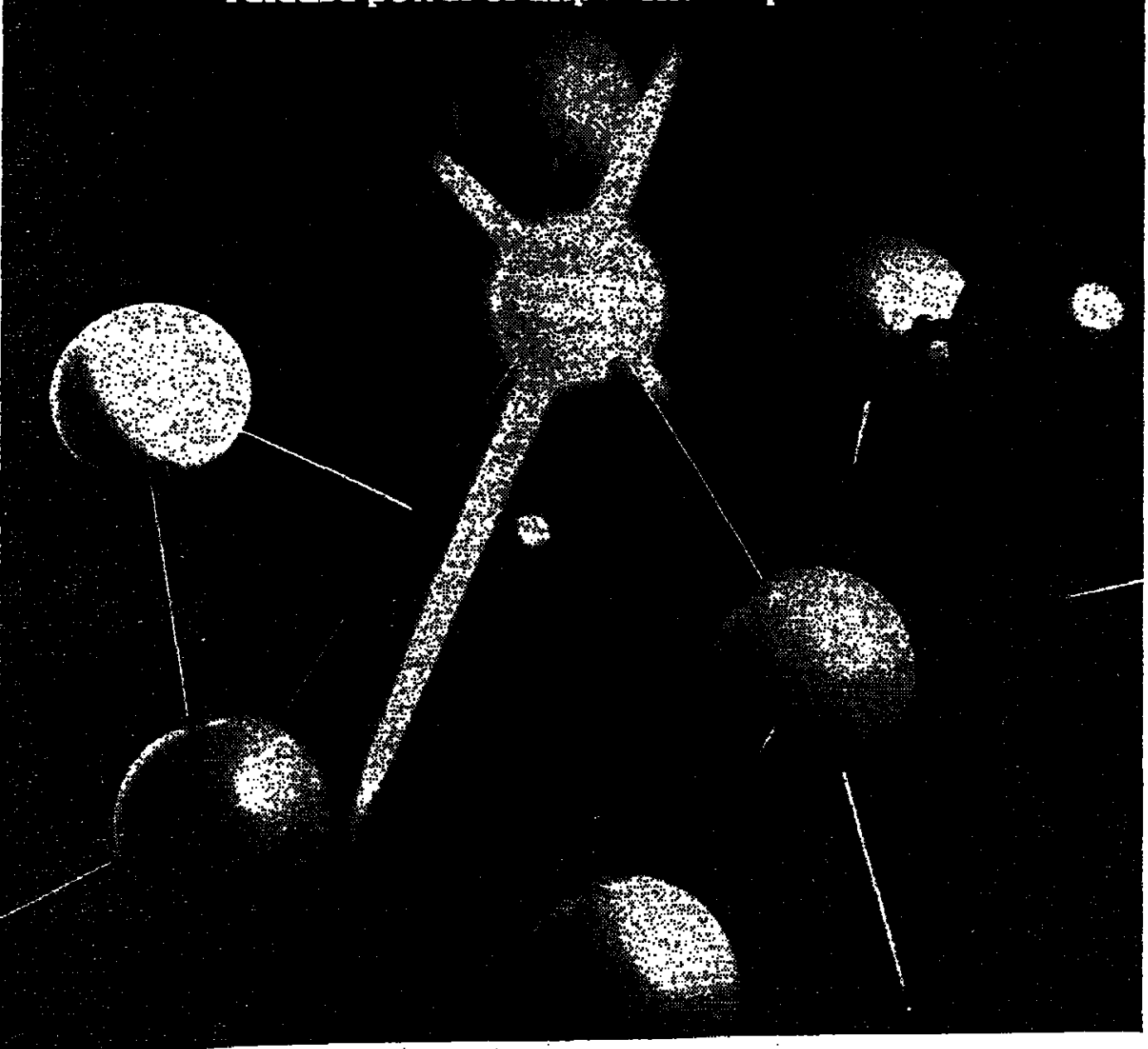
Plessey's TDX by contrast has been adopted by Telephone Rentals. This company chose the TDX because it did offer data communications which does not need a dedicated data link.

The ability to transmit data on an intermittent basis is becoming important because of the proliferation of terminals in the office. These terminals require access to a number of services such as connection to a company's mainframe computer, communications with other terminals, teletex and telex networks. Any communications network must be able to switch from one environment to another.

Most communications managers, however, are still at the stage of considering integrated voice and data networks, rather than having implemented them.

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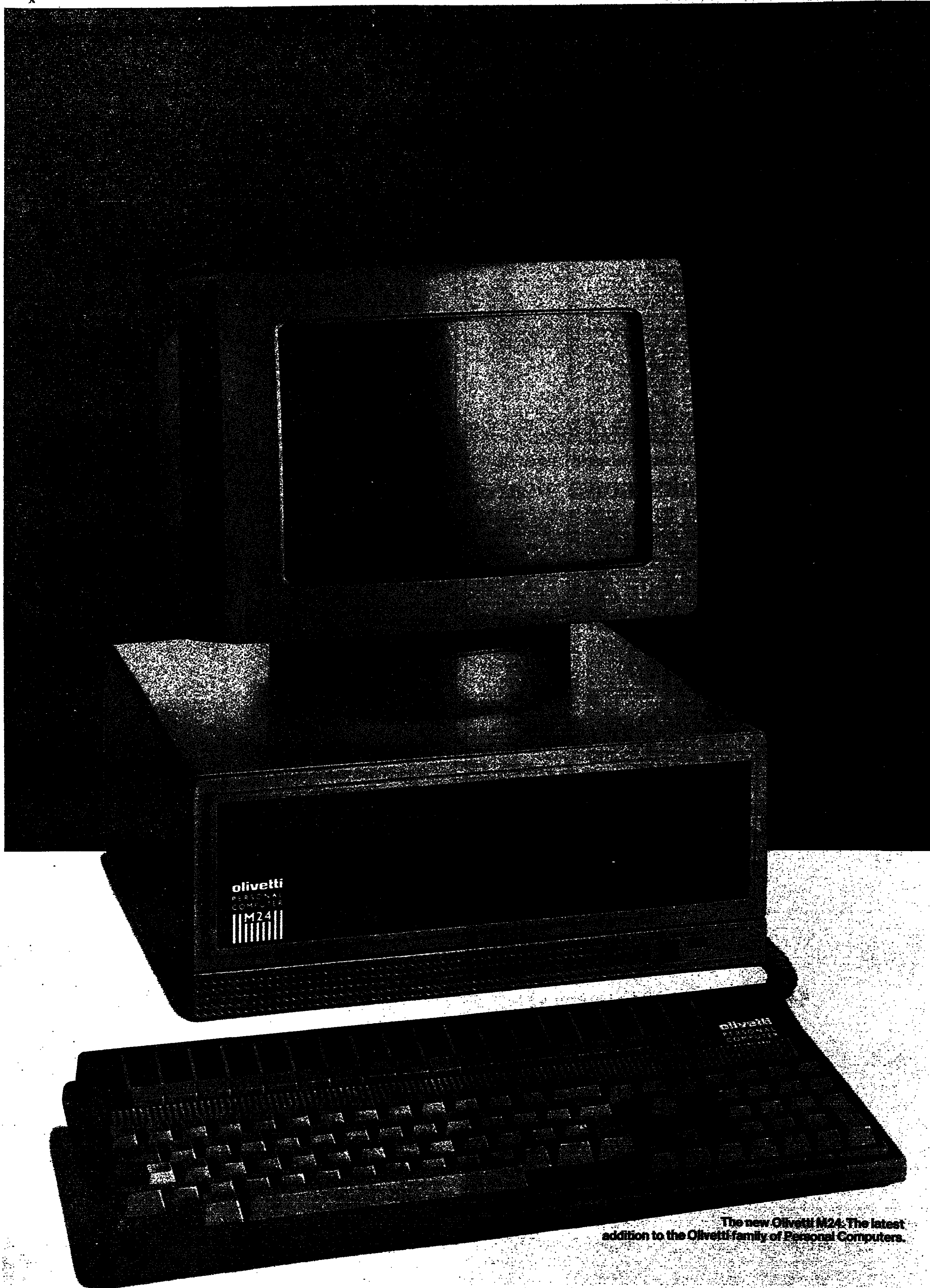
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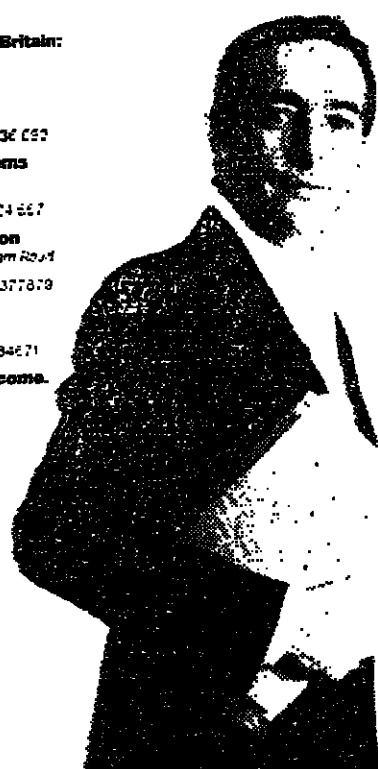
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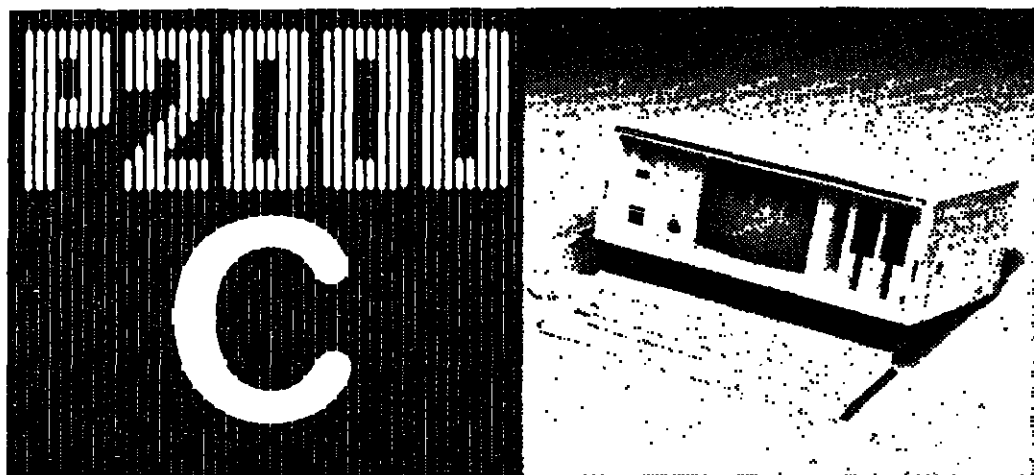
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 5. Interfaces: serial printer, external floppy drives, hard disk, data communications, slave monitor, IEEE 488
 6. CP/M 2.2 is a standard of 200 for 8086/8088
 7. System is a trademark of Philips Research Inc.

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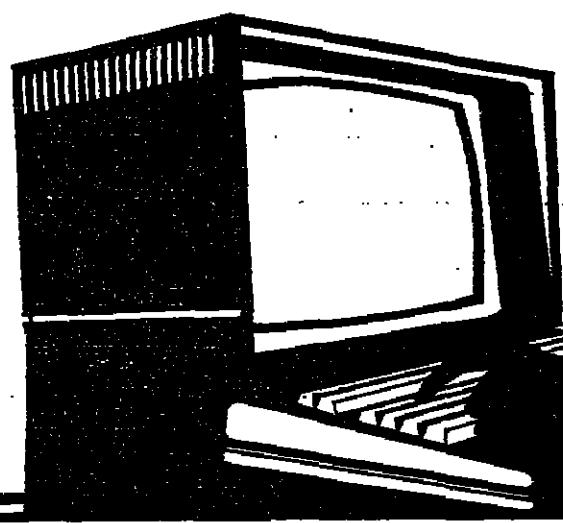
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THE DESK-TOP REVOLUTION 12



Left: portable computers open new horizons for executives on the road. Here an Olivetti 1010 is being used to send a message over the telephone lines via an acoustic coupler. Right: Mr. Jeff Bouch, office automation manager of the pharmaceutical division of Ciba Geigy, using Telecom Gold's electronic mail service, via a portable Whisper Writer.

Growing revenues counter fears of paperless business world

The power of print

ARE WE really plunging into a paperless business world in which affairs will be conducted via screen and keyboard?

Hardly. Market researchers at Frost and Sullivan conclude that, in 1982, world-wide revenues for all types of printers were between \$6.5bn and \$7.0bn.

This is some 10 per cent of the total world computer market and the percentage has been growing, not declining.

These figures partly result from the low end (under \$2,000) printer demand brought about by the increasing numbers of small business computers. Growth in the numbers of such printers is put by Frost and Sullivan at 78 per cent for 1983.

For 1984, the prediction is that over 2.5m such units will be sold in the U.S. alone.

But the market is becoming crowded. More than 100 vendors are said to be operating worldwide, offering 500 models in at least six technologies—and those figures exclude electronic typewriters, ticket printers and telex machines. Clearly, paper will endure. Company executives want text and graphics for their briefcases. The display terminal, for all its advantages, cannot be carried about easily.

The three affordable categories for office printing, all operating character by character, are: dot matrix, fully formed (that is, typewriter-like), and non-impact.

In dot matrix printing, a vertical array of seven, nine, 16, 24 or even 32 thin rods move across the paper to make a line of print. The dots are made by the ends of the rods as they are pushed on to a carbon ribbon by tiny solenoids in appropriate combinations to form letters or numerals. The seven wires use five columns to make a character, nine wire machines use seven, and so on.

More rods mean better formed characters, although machines with two, slightly offset columns of wires are being used, one filling in gaps left by the other to give a more "dot-less" character.

One objective is to compete with the "fully formed" machines to give print quality acceptable for company letters. Until 1982, dot matrix machines had about 90 per cent of the low end market. By 1987, it could be down to 70 per cent, according to F&S.

The dot matrix designers have

replied with multi-code machines. In one mode, 150 cps (characters per second) basic printing is produced by single pass, bi-directional head movement with skipping of blank passages. In the second, "letter quality" work is produced by multiple passes to build up solid characters, with the speed reduced to about 30 cps.

In three years, the Japanese have won dominance in dot matrix machines and the market share of U.S. companies such as Centronics, IDS and Andalex has dropped from nearly 70 per cent in 1980 to 15 per cent in 1983, according to F&S.

Today says the research company, three Japanese companies, Epson, Okidata and Tokyo Electric, have about 70 per cent of this segment.

It was the U.S. company Diablo that introduced a computer driven "typewriter" that dispensed with the type bars or golf balls of conventional machines. The design became known as "daisywheel" because each character of a solid font is carried on the end of a "petal," forming a radial web round the 360 degrees of the "daisy". This lightweight wheel can be rotated at high speed to align each character with a print hammer, which then makes the

imprint through a carbon ribbon.

There are 20 or so brands of daisywheel on the market, some now print more slowly (under 20 cps) and so are less expensive (\$500 to \$1,000). They are said to be selling well.

A variant, the NEC Spinwriter, uses a shuttlecock-like print wheel and has given the Japanese company a market share commensurate with that of Diablo, which had about 30 per cent in 1982, according to F&S.

Qume (part of TIT) had 15 per cent while another Japanese company, C. Itoh, has become a major force (18 per cent in 1983). The figures for 1983, however, might well be different because companies such as Olivetti, Triumph Adler, Olympia and Hermes are making machines as part of their electronic typewriter operations, not to mention Wang and IBM.

Challenge

There will also be increasing challenge from non-impact technologies such as ink-jet, magnetic, electrostatic, electrosensitive and thermal, although the last three need special paper.

In ink-jet printing, tiny drops of ink from a single (or multiple) nozzles are electrostatically deflected to strike the passing (plain) paper with extreme precision. Almost any kind of character or graphics can be formed in monochrome or colour.

Stable low end office products are beginning to appear. One of the first was the Quiet Type seven character machine from Siliconics, offering 9 x 7 matrix characters printed at 180 per second. The price is below \$1,500 in volume pur-

chases, putting it well into the "office" category.

The very few moving parts make ink-jet printing potentially very reliable and the machines are quiet and compact. They can also print any programmed font or graphics on demand, although the more recent dot matrix machines can also offer font variation.

But ink-jet cannot produce the simultaneous multiple copies of the impact machine. Although the potentially high speed allows rapid sequential "copying", there is apparently some office resistance to "lack of carbon".

Siemens and IBM have been in the field for some years and other makers include Anderson, Jacobsen, Olympia, Printcolor and Sharp. It is estimated that 15,000 units will be delivered in Europe this year, worth about \$45m.

However, the figures so far tend to speak for themselves. The Frost and Sullivan estimates of low-end machines delivered in the U.S. in 1983 was 1,700,000, of which 85 per cent were dot matrix, 12 per cent solid character—but only 3 per cent non-impact. Even so, a recent report from Keith Wharton Associates is bullish on ink-jet: "In our view, it is the clear favourite to have achieved the largest installed base by the end of the decade."

At the last National Computer Conference, Diablo, Kanica, Printcolor and Sharp introduced new models, typically working at 20 cps in four colours with 16 x 2 matrix characters. Prices are in the \$1,000 to \$2,500 range. But there is new interest in thermal printing. Diablo has introduced a \$3,500 unit using a heated stylus to make pixels (picture elements) at 200 dots/inch and six pages a minute. There were others from Fujitsu, Mitsubishi, and Sanyo.

The message was clear enough: colour, graphics, and the Japanese are here to stay.

Computer Printers Market in Europe, 1982; The Market and Competitive Outlook for Low End Printers, 1983; both from Frost and Sullivan, London (01-498 8377).

Market Report: Printers, Graphics and Integration, Wharton Publishing, Richmond, Surrey (01-940 7366).

U.S. LOW-END COMPUTER PRINTERS

Shipments forecast in thousands of units

Type	1982	1983	1984	1985	1986	1987
Dot matrix	869 (91%)	1,436 (85%)	2,644 (79%)	2,886 (75%)	3,351 (73%)	4,019 (70%)
Solid character	61 (6%)	221 (12%)	484 (15%)	824 (21%)	1,178 (26%)	1,614 (28%)
Non-impact	25 (3%)	43 (3%)	59 (2%)	72 (2%)	92 (2%)	169 (3%)

Source: Frost and Sullivan

CASE STUDY: STRAIGHT LINES

Moving on to system four

CLIVE BAYLEY is one of life's achievers. He is the ex-head guitarist of the "Yes" pop group, the proprietor of the Chick nightclub in Chelsea and is now the head of West London-based company, Straight Lines.

This is a design and manufacturing company whose fortune is counted on the success of cocktail glasses with built-in twirly straws. Straight Lines' products are on display in New York's Museum of Modern Art and at the Victoria and Albert and were singled out by the Design Council as "most interesting design of the year."

They sell well, too, and Straight Lines' UK turnover for 1983 was £1.5m and is on schedule to double this year.

In his two-and-a-half-year-old business, Mr Bayley has shown a growing commitment to office automation. Upwards of £10,000 has been spent on micros so far with another £18,000 committed for the immediate future.

"The budget for computers is fairly open," says Mr Bayley. "In the light of our experience we now want something that we don't have to update. One mistake we might have made is not looking at expansion."

The choosing (and the using) of the micros has fallen to Mr Mac Khan, the company accountant. The company's rapid growth has overtaken the storage capacity of its computers. They will shortly move on to their fourth system.

Mr Khan first selected an Apple machine to produce invoices for 300 accounts. This machine, he says, was outgrown within months and he purchased a Sirius with 1 megabyte of floppy disc storage. That switch brought problems in transferring the data from one machine to another but it too

became obsolete within six months.

His current system is another Sirius but with a 10-megabyte hard disc unit and running a suite of accounting/word processing programs from TABS. He set it up to accommodate 3,000 accounts, and it easily manages the current 2,000 strong account base.

The company paid £2,500 for the TABS suite, having first contacted the software house at the annual autumn bonanza of the computer industry, the Compec exhibition at Olympia.

Straight Lines is well pleased with the TABS London distributor, Raindrop, and has now decided to use this firm to buy and support its soon-to-be-installed system. This decision was not made until Mr Khan had heard the sales pitches of some 30 other suppliers.

The new demand is for more sophisticated software which copes with more chores and enables multi-terminal operation. "TABS is now doing a good job for us, but we want more information now," says Mr Khan.

He requires instant analyses of sales by territory and up-dates of sales force performance. He also needs revenue returns broken down to the 15 or so individual products.

There is also a requirement to have two terminals in the accounts department, plus one in Mr Bayley's office, one for sales and, once a warehouse is opened, a terminal linked to it.

Such a specification meant a move away from the Sirius which will, however, be kept on to handle word processing. It also meant a change of software. Mr Khan eventually selected for a package called BOS. This is designed for multi-users and can be tailored by the software house to meet

individual requirements.

To run this more powerful software, Straight Lines has bought a Crystal 68000 on the recommendation of Raindrop.

The Crystal 68000 is a six-month-old British built micro with 26.6 megabytes of storage space. It incorporates five operating systems which should ensure that the company can use a wide range of software packages if, as is likely, the demand for extra applications continues to grow.

"Our biggest problem all along has been software," says Mr Khan. "Anyone can learn to use hardware." His advice to those thinking of following the course he has taken is that they should expect to proceed grad-

ually. He thinks a parallel manual system should be maintained for at least six months and he himself still keeps two filing cabinets full of paper more as a psychological backup than anything else now.

And he adds: "You've got to know what you want, because micro's aren't magic. From a management point of view it has been invaluable to readily see reports on monthly profit and sales and stock levels. To use it though forces the company into a discipline. The micros have put us in a correct framework."

Paul Fisher,
Microbusiness Magazine

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THE DESK-TOP REVOLUTION 13

Work areas
undergo
radical
changes

THE desk-top revolution is bringing with it not only an upheaval in working practices, but also big changes to the total office environment.

It also means a welcome spin-off for the computer-related systems furniture manufacturers—a market which in Britain alone is now worth more than £40m a year.

The growing profusion of visual display units is a matter of extensive research by the integrated office systems manufacturers. In Britain, where there are more VDUs per head of the population than any other country in Europe, the Government has produced a useful guide to companies and employees alike on the use of VDUs in the office.

It points to the possible effects on the health of VDU-users and comes to the conclusion that "the majority, if not all of the symptoms described



The London headquarters of British Telecom's Telemessages service: desks by Lucas Furniture Systems accommodate a complex network of power and telecommunications cabling.

by VDU operators are a reflection of the visual system and working posture."

"These problems," it says, "can be largely overcome by the design, selection and installation of VDUs and associated equipment that is susceptible to workplace, including the physical environment."

Provided proper precautions are taken and the advice on office environments followed, the user of a visual display unit should have no health problems unless he or she suffers from a previous weakness e.g. eye-strain.

Herman Miller, which leads the UK market for integrated computer-related systems furniture, anticipates "a dynamic and decisive year ahead" in this sector.

The company expects to see yet more suppliers entering the crowded market—but a shake-out is also likely as the

larger suppliers become larger and the smaller ones become smaller.

As micro mania sweeps Britain, office managers are becoming more aware of the relationship between ergonomically-designed workstations and efficiency. The mere arrival of an impressive-looking computer on the office desk is certainly no guarantee that efficiency will be maximised overnight.

Steelcase Srafer, the world's largest office furniture manufacturer, along with other leading suppliers, carry out extensive research on ways to improve the office workstation, as well as ways to overcome the problems of cable management in the electronic office.

Steelcase estimates that a fully integrated furniture system may cost around £1,100 per person.

Thus, the company explains, in an office of 40 (where the installation expenditure would total £44,000), savings of up to £32,000 a year could be achieved if one assumes that the new working environment will reduce distraction and allow for the recovery of 10 per cent of work time—"not an over-ambitious objective," says the company.

*Visual Display Units, HSE Publications, 49 High Street, Holborn, London, WC2.

Michael Wiltshire

CASE STUDY: MICRO FOCUS

New market identified

MICRO FOCUS is one of Britain's more successful young companies exploiting the explosive growth in business personal computers. It is only fitting, therefore, that the company has one of the most advanced office automation systems, based on micro-computers.

"What we are doing is right at the leading edge," says Peter Hewitt, marketing manager at Micro Focus. The company has linked 150 of International Business Machines' top-of-the-range Personal Computers to several mainframe and mini computers.

The idea is to give every member of staff their own IBM PC/XT which can be used for everything from software development to an electronic diary.

The Micro Focus example demonstrates how the personal computer is increasingly becoming the major route into office automation. The personal computers double up as the ubiquitous terminal. But it also shows that in a world dominated by IBM computers it is often the logical choice to build such a system around IBM PCs—or rival plug compatibles.

It should be said, as far as IBM goes, Micro Focus may be a special case. The company's main business is in supplying software development aids for the microcomputer industry. These are based on COBOL, the widely used business programming language. The majority of the company's sales are made through computer manufacturers.

Customers include Apple, Digital Equipment, ICL, Acorn, Ferranti, Hitachi and Canon.

But Micro Focus has identified a new market opportunity in large companies with computer staff trained in COBOL for the mainframe computers. As those companies move towards using more micro-computers they will be able to program them using the Micro Focus products.

"Most of these companies are using IBM," says Peter Hewitt. "The overriding reason for choosing IBM ourselves is the need to understand the IBM software and hardware environments for this important market."

Micro Focus was floated on the United Securities Market (USM) a year ago with net proceeds of £2.1m. Much of the proceeds have been used to build Micro Focus' advanced



The Micro Focus electronic office: demonstrating how the personal computer is increasingly becoming a major route to office automation.

office. The company has installed two IBM 4341 mainframe computers which have been installed at its new offices in Newbury, Berkshire and at Palo Alto in California's Silicon Valley.

The company has installed a network of 150 IBM PC/XTs—the top of the PC range which has a large memory in the form of a Winchester disc drive. It also has equipment from Xerox and Systime.

Other uses include sales information, marketing and customer mailing lists and word processing. As a result of the installation of this system, the investment per employee is about £20,000, a figure more comparable with the average office worker, even in high technology industries.

But Mr Hewitt adds: "We believe there are major benefits from that investment. We are only in the foothills of a steep learning curve and can envisage much greater expenditure per head." One of those benefits is that it is making this small far-flung team feel as if they are working closer together. "I think people probably work better as a team because they feel colleagues are immediately accessible."

So although Micro Focus is a small company—it employs a little over 140 people—it is also operating around the world and faces the problems of the different time zones in Tokyo, California and England. As a result most of the international traffic on the company's network

Jason Crisp

CASE STUDY: BENEFITS OF COMPUTER USAGE IN A SMALL BUSINESS

System cuts down monthly accounting chores

HOTEL-OWNER Mr Tom Stewart is an example of a businessman who once knew very little about computers. Then he bought a system that not only reduced monthly accounting chores from three weeks to just a couple of days but it also paid for itself within six months.

At first, Mr Stewart, who runs the Methuen Arms in Corsham, Wiltshire, had his own well-tried accounting methods and formulae and did not want to change them just because he was thinking of buying a computer.

The trouble was, although he had over 30 years' experience in catering and hotel management, he had no knowledge of computers. Prices tended to be more than his small business could afford and the software "might have been fine except, that it didn't suit me."

Taking the drudgery out of wages and accounts is still the mainstream requirement from

computers in the small business. The Methuen Arms has 28 bedrooms and a staff of 35 and is an official tourist information centre.

After a half-hour demonstration of the Sord M23 MkIII computer, Mr Stewart concluded that he could make it do what he wanted, "rather than what it would do." The answer for him lay in PIPS, Sord's programming language developed in Japan which is claimed to be easier to learn than BASIC and which allows the novice to write his own applications programs.

A game, Old Othello, was supplied with the computer and Mr Stewart, together with his two managers, Helen Mann and Clare Carost, worked as a team to "beat the machine".

"That was marvellous," he says. "Within about a week we could beat it eight times out of ten, and that of course gave absolute confidence. I thought: 'Right, that's got

you hammered, I've brought you down to my size, now I can get working!'"

Variables

After that he worked through the manual and very quickly assembled the kind of formulae that he needed to use for his own accounting systems.

He started by putting the hotel's payroll and tax deduction cards (PIIs) on it and, to begin with, made all the entries by hand. A short program then did all the repetitive calculations and produced a summary at the end of the week "that cut off a couple of hours of manual labour straight away," he says.

Although he had not used a computer before, he discovered two things about computing very quickly. The first was that computers could easily be used for mechanical calculations such as those associated with accounts. The second was that they could compute variables in

such areas as wage calculations. For instance, having been fed with certain parameters, the computer can be programmed to work out the Free Pay and Tax due this week once it knows a personal code number.

In the same way it can calculate NHI contributions once it is told which deduction rate (A, B or C) is to be used. It was the "variable" part that proved more interesting to him in devising his program.

Using PIPS he found it easy to develop the program week-by-week and at each stage a few more lines were added. As it became more automatic it began to cope with individual circumstances such as a member of staff who was liable for tax, or a situation requiring adjustment to NHI contributions because the gross pay for the week exceeded the maximum earnings limit, and even the pensioner who was on Week 1 Tax deduction. Before the Sord came

into use, he says it usually took him and his staff anything up to three weeks to produce these results by hand. Now with his program running on the computer, all the accounts for the previous month are ready in two or three days. This means that his management decisions can be made much earlier than before.

On the basis of time and money it has saved, Mr Stewart says that the computer paid for itself within six months.

Usage of the system has now been extended to provide a directory of all business clubs, organisations, facilities and services in the Corsham area, comprising 208 classifications, as a service to the town and to visitors. His accounting system will also be developed to cope with other tax bands, superannuation and personnel files.

M. W.

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THE DESK-TOP REVOLUTION 14

CASE STUDY: NATIONAL COMPUTING CENTRE

Key questions on efficiency

ASK Steve Price about computers to automate offices and he will pull out a pencil from his jacket pocket. "People have yet to devise systems that do a better job than a pencil and paper," he says.

Mr Price should know what he's talking about. He is the manager of the office systems division at the National Computing Centre, which earns some £13m a year advising the Government, companies and the country at large about the best ways of using computers.

But anyone who visits the organisation's Manchester headquarters and expects to find the place awash with desk-top machines is in for a disappointment. The 350 or so staff in the head office (of which some 200 are professional computer people) can muster only about 40 personal micros between them.

Twenty of these are Apple computers which the NCC bought about three years ago. The machines are linked in a network and used by consultants and managers in the organisation's office-automation and communications divisions.

These people spend most of their time writing reports and books or giving talks about the best practices in office computers. The network, installed by the British company Zynar, gives the computer researchers a chance to try out their ideas in real office tasks.

But apart from this system, the inter computers have been installed in a piecemeal fashion. The NCC wanted to learn about how people use the machines and come up with grand plans later.

"We thought we'd let a thousand flowers bloom," says Mr Price. "We can pour on the weed killer afterwards."

"In five years, we will probably have a strategy for office automation and virtually everyone will have a computer," says Dr Peter Scott, manager of the communications division. "But it's too soon to start implementing any such ideas right now."

The NCC's staff have, however, learned a lot in their use of desk-top machines which would benefit others who are thinking about office automation.

Take, for instance, Joe Abbott, who works in the centre's data processing division. He researches into new programming techniques—for example, he is now working on ways to test the quality of software. Mr Abbott has to communicate the results to the NCC's customers, mainly through hefty reports of up to 50,000 words.

Mr Abbott used draft reports long-hand. He would then send them to a typing pool, re-edit the documents and send them back again. Before it was

finished, the report might visit the typing pool a dozen or so times.

Last year, Mr Abbott's wife had twins. He had to take time off and his work started to suffer. Mr Abbott decided he needed a computer. The NCC wasn't willing to buy one for him, so Mr Abbott himself spent £3,000 on an Apricot personal computer, plus printer.

The results have been staggering. In the four months since Mr Abbott bought the system, his productivity has shot up. He says that with the hardware he can write up to 5,000 words a day—the previous maximum was 3,200. As well as finishing reports in half the time, Mr Abbott can make his work more polished because editing is so much easier.

Whereas Mr Abbott uses his

But the discipline was useful. I had to point out to myself that the time spent in this activity would probably not have been worth the result."

The biggest advantage of the machine to Mr Blood has been in presenting financial information, sales budgets for instance. He can also tell the computer to assess what is likely to happen in the light of different circumstances.

For example, the machine could forecast the cash that the NCC would obtain from its training course, and how many people would be needed to run them, if demand were suddenly to shoot up.

"I can get answers to a lot of 'what if' questions to a far better degree than before," says Mr Blood.

What are the disadvantages?

He is not very quick on a keyboard. To dictate letters is, therefore, a more efficient way of using the time.

The only staff in the NCC's head office who can communicate with each other using computers are those linked via the Zynar network. Paul Wilson, one of the consultants with this facility, admits he is a computer enthusiast.

He uses his computer not just for word processing and for holding files but to send tit-bits of information to his colleagues. This can be a useful way of passing on snippets of news that people might distribute if they spent all day chatting to colleagues over tea or coffee. But they lack the time for such a welter of informal conversations—and the information is not deemed important enough for a telephone call or a written memo.

The extra communication that this facility produces raises the quality of work, say the NCC's managers, although the exact effects are virtually impossible to quantify.

Sometimes people are bolder using the keyboard than they would be with a written memo. For example, people may be more inclined to send to their boss a computer message to "put" him into doing a job that he had forgotten about.

Of crucial importance, says Mr Wilson, is the time that it takes to learn to use an office-automation system. Even for computer professionals who can be expected to know something about hardware and software (and be interested enough to use the machines) the time can run into weeks.

"Sending someone on a training course is not enough," says Mr Wilson. "Managers have to allow for employees spending a lot of time not doing their ordinary jobs but learning how to use the computer."

Despite the caution at the NCC about setting up a corporate policy on computers, one man has evidently decided that the machines are for him. This is David Fairbairn, the centre's director. He has a portable Tandy computer on which he writes his own speeches and letters—even on aeroplanes.

The next step is to connect this up to another machine in his secretary's office.

The degree to which men and women employ computers in the office, says Mr Wilson, is ultimately related to what kind of people they are.

"One thing we still don't know is how much use people will get out of computers—even when the technology is extremely sophisticated—if the people themselves are basically disorganised," he says.

Peter Marsh



Mr David Fairbairn, director of the National Computing Centre

machine solely as a word processor, Pat Blood, a manager in NCC's sales-support division, has a more diverse range of applications for his Tandy micro-computer.

The centre bought four of these three years ago. Apart from Mr Blood, three other sales managers were given the machines. There was no stipulation as to what they used the hardware for.

Mr Blood and his colleagues are responsible for a range of sales activities. The items sold could be books or documents that give advice on computers. Or they could be services such as the provision of training courses.

Despite being involved with computers for a long time (he had been a programmer and the head of the computer section in a manufacturing company), Mr Blood had never had a machine to himself.

"One difficulty was that I had to behave as a manager rather than as a programmer. I had to stop myself wanting to change software in the machine."

"There is a danger that you can get sucked into doing jobs in too much detail. You can become absorbed by the power of the machine and time disappears very quickly."

"You can start to come up with a lot of very precise information on a set of circumstances when probably you could have got by with looking at the situation on a micro-level."

As an example of this, Mr Blood once asked his machine to assess all the charges that the NCC's administrators levied on its staff for using the centre's big mainframe computers. The information was needed to settle a particular query.

Now the machine has been set up to obtain the data, Mr Blood finds himself obtaining it on a routine basis—even though he doesn't really need the information.

Having his own micro doesn't mean Mr Blood has dispensed with his secretary. He did try typing his own letters for a while but like many managers

CASE STUDY: BANHAM ALARMS

A route to easier accounting

BANHAM Patent Locks is one of Britain's oldest security companies. Its areas of involvement range from security hardware, such as locks, grilles and safes, to intruder alarms, closed-circuit TV and fire alarms.

The company is divided into several areas, one of which, the security alarms division, has already installed some 20,000 security systems.

More than a year ago, the division decided to automate its accounts and administrative operations. The first stage was the computerisation of the sales ledger—ultimately holding full details of more than 10,000 current accounts.

The division looked at several systems, but decided that software requirements would make or break their particular application. It had to be capable of providing full, up-to-



Staff at Banham Alarms operate the new multi-user system installed by Bromcom.

the-minute details of each customer, together with account details and invoice generation, and also had to allow instant recall of archival client invoice information.

After software and hardware evaluations, the division eventually decided that Bromcom was most suited to its needs. The division took delivery of a four-terminal multi-user multi-

processor SuperStar system with a slightly modified, tailor-made Bromcom sales ledger application software and a purpose-written invoicing program.

SuperStar, which starts at £2,450, is claimed to be considerably cheaper than other competitive products, for a similar system based on a mini-computer would have cost in

excess of £20,000 and would have taken longer to implement.

Sales ledger accounts could be easily updated with the knowledge that a file can be simultaneously accessed by all users, with only a particular record being locked. A message is displayed if a terminal tries to access a record currently being updated by another terminal.

In full operation, the system allows all users (up to 16) to enter, say, invoices or payments simultaneously; this is the added benefit for genuine multi-user systems. Each user can, of course, operate different packages at the same time, for instance Ledgers, WordStar, dBaseII, and so on.

Designed and manufactured by Bromcom in the UK, SuperStar is a multi-user multi-processor system that is now based around a 16-bit master processor; the system provides full record and file-locking facilities, multi-user capabilities, up to 160Mbyte of Winchester storage and fast tape streamer back-up. It supports up to 16 terminals (more by networking), each with a separate slave processor running industry standard operating systems.

Michael Wiltshire

CASE STUDY: AIRSPEED CARGO

Decision-making is far easier now

AT THE END of one of Heathrow's busy runways lie ten exhausted but far from rotten Apples. During the past four years they have each put in about 14,000 hours grinding out bills of lading, certificates of origin and the many other bits of paper needed to move goods from one side of the world to the other.

Their owner, Peter Widdowson, managing director of Airspeed Cargo, is proud of them: "They have made decision-making far easier because we have a monthly analysis of the business which takes a couple of days to prepare instead of three months as it used to do with the manual system."

They have also drastically cut the time it takes the small company (63 employees) to produce quotes. Widdowson waves a sheaf of letters most of them dealing with a potential client's desire to get toiletries to Kuala Lumpur quickly.

"We put this quote on his desk the same day it was asked for. Now he's seriously considering moving all his business to us. Of course in the end it depends on the price and service, but the system helps us to be far more efficient."

Widdowson is one of those businessmen who claim to know nothing about computers. But it is soon apparent that his self-taught knowledge is far deeper

than he admits. This elegant bluff has enabled him to install and successfully run a simple local area network at a time when most people in his business are still struggling with the technology of the Remington typewriter.

The decision to buy computers was forced on him when a computer bureau he was using to process the sales ledger could no longer handle the work. They needed to upgrade their equipment and effectively wanted Airspeed to help with the cost. Mr Widdowson did not share the bureau's enthusiasm for their idea and decided to go it alone.

First, he worked out exactly what he wanted the system to do. Second, he decided on how much the company could spend. He admits that the costing process was far from logical and relied more on gut feelings. Then he went out to look at the technology.

"Knowing little about where to go, I approached all the big names. But after receiving some silly offers I decided to buy from a nearby dealer," he says.

Mr Widdowson admits that it was not one of his best decisions. The dealer went bankrupt in the early stages of the project, but fortunately the suppliers continued to support him.

The dealer recommended a

Nestar system which links Apples that act as dumb terminals. It is driven by an Apple II which controls a 16.5 MB hard disk on which is stored the software and all the files. Airspeed have two systems working in parallel serving 10 terminals. Clerks and managers can have access to the same files as their colleagues, while working from their own terminals.

Loud hum
The controlling Apples and disk drives produce a loud hum and are kept shut up in a broom cupboard from which lead flat wires connect the other computers. The cupboard also holds a tape copier for backup and security tapes which are kept outside the building in case of disaster.

The software had to be especially written to suit the company's needs and Mr Widdowson managed to get an initial system of three terminals, three printers, a disk drive and the software for £21,000. That was in 1979.

Since then he estimates the upgrades have pushed the price up to about £40,000, which is a lot of money for a system that is nowhere near being state-of-the-art. But it has worked which is a lot better than many other similar configurations.

"If you had to include the time that I've spent on the system then it would be impossible to cost-justify it. I reckon that it pays for itself on capital costs alone, between the second and third year."

Compared with more sophisticated computer systems, this one is slow. It takes a long time (5-10 minutes) to load a program onto a terminal. The staff have adapted and usually keep different programs running on separate terminals, scurrying up and down on their wheeled chairs like human packet switches.

There is an air of almost reckless practicality in the office. Clerks switch work from terminal to printer or telex tape cutter by manually plugging in the right connections. No fancy switches here. One important wire actually runs over the hot pipe leading to a central heating radiator, but there have been no serious breakdowns.

The staff like the system. It takes a school-leaver about three days to learn, taught by one of the experienced staff. One clerk says: "In my previous job we had to type all these addresses and figures out by hand. I could never go back there now."

Neither could Peter Widdowson.

Peter Knight



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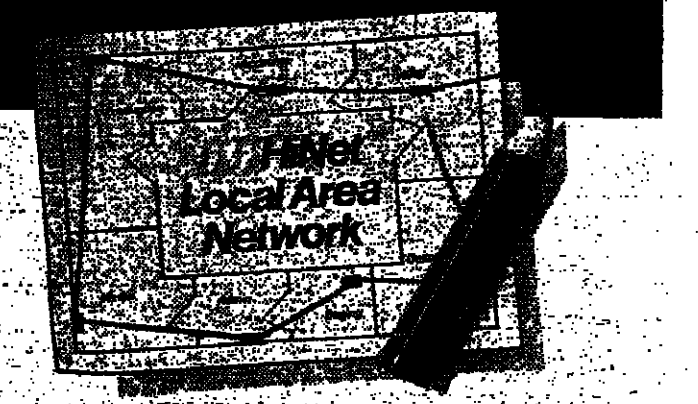
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THE DESK-TOP REVOLUTION 16

Fierce competition between major suppliers

U.S. market becomes a battleground

THE U.S. office automation scene is not so much a marketplace as a battleground.

The heavy artillery in the shape of IBM and AT&T are lined up for what industry watchers term "World War III." Shooting for a smaller piece of the action are hundreds of vendors of minicomputers, workstations, personal computers, private branch exchanges and the multitude of add-on products that go together to automate offices.

Basically, IBM and AT&T will be battling over which will wire up office buildings for data communications. As the battle begins AT&T has most of the wires and IBM has most of the gadgets that hang on those wires.

Last month, however, AT & T began its attack upon the IBM stronghold with the announcement of a series of mini and micro computer products. Before the year is out, IBM is expected to launch its "wiring system," a local area network and in conjunction with Rolm Corporation the switching systems that connect local wires to the rest of the world.

There is a lot at stake. By 1990, 80 per cent of all white collar workers in the United States will have information devices on their desks, according to market analysts.

World personal computer shipments will total \$8.7bn this year, according to International Data Corporation. Of those, the market researchers expect \$5.4bn to go to the U.S. business market.

Expansion

U.S. shipments of private branch exchange (PBX) systems will top \$26m this year, according to IDC, and could grow to \$32m by 1987.

Word processor sales of over \$3bn this year with the potential to reach \$4.2bn by 1987 add another gem to the office automation market crown.

Then there are whole segments of the office automation field that are just beginning to emerge as sizeable markets. Local area networks have been talked about for several years, but this year they may become a widespread reality. Microcomputer software is also becoming a significant market sector.

Changing the shape of the office automation market is the

BY LOUISE KEHOE
in California

personal computer. There were 650,000 IBM personal computers sold in 1983 and 1.5m are expected to be sold in 1984.

"They are workstations waiting for a way to communicate," says Mr George Colony, president of Forrester Research in Cambridge, Mass.

As users discover that they have real business requirements for electronic communication, they also recognise that there is still a long way to go before the diverse range of equipment that they use can be linked together.

Like many IBM watchers, Mr Colony expects IBM to make a product announcement in the first half of 1984. He predicts that IBM's network will be multi-layered, with a ring to link IBM PCs, another to link floors, a high-speed ring to link system 370 mainframe computers.

"IBM and Rolm will jointly announce a very large CBX-based product by October 1984," Mr Colony predicts.

A Rolm switching system will attach IBM local area networks for inter-facility communications, he suggests.

Rolm's PBX will be IBM's gateway to the outside world, says Mr Colony.

The IBM Personal Computer has reshaped the personal computer market, of which it now holds approximately a 40 per cent share. IBM compatibility

is now regarded as mandatory for any new personal computer (with the singular exception of Apple Computer's products).

IBM-compatible computer makers are, however, becoming increasingly concerned that "Big Blue" will introduce new proprietary features for its next generation personal computer product leaving the "compatible" makers out in the cold.

The personal computer has also made radical changes in the office automation equipment market. In 1982, close to 54 per cent of word processing units were dedicated to that task. By 1987 less than 29 per cent will be special purpose machines; the rest will be personal computers, according to IDC.

IBM's latest addition to its personal computer arsenal includes the transfer of its displaywriter word processing software to the personal computer.

The move sorts out a previous inconsistency in IBM's office automation product line where the dedicated word processor competed with the personal computer.

"The PC software spells the end of the Displaywriter," says Mr John Kiefer, an analyst with Infocorp of Cupertino, California.

Steady gains

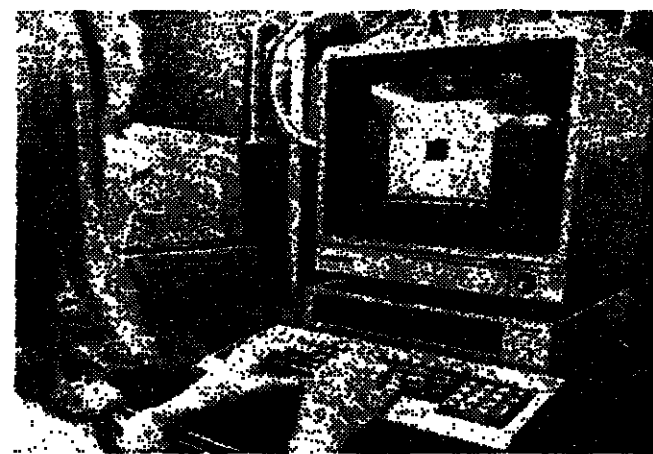
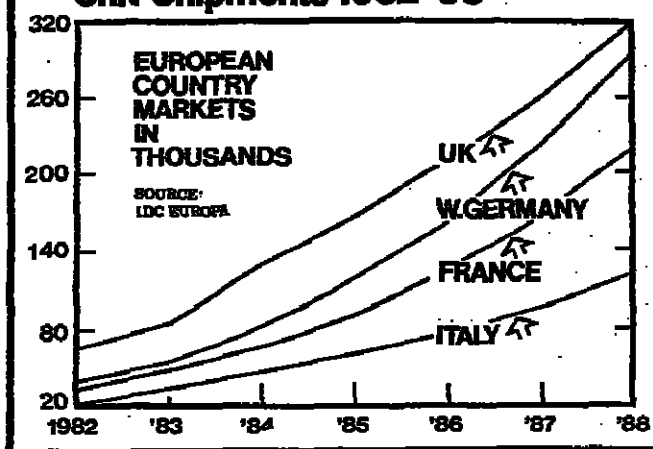
With its troops in order, IBM is steadily gaining ground in the office automation market.

"The combined installed base of IBM's PCs and word processors (270,000 at end of 1982) makes it probable that more U.S. business office desks have workstations made by IBM than by anybody else," says IDC.

But "Big Blue" is not invincible. AT & T—which matches IBM in size and stature—is out to prove. Recently AT & T introduced "the first of several" computer products—a range of computers built around its "Bell Mac" 32-bit microprocessor designed at Bell Labs. The machines range in price from \$10,000 up to \$300,000 and cover the performance of a multi-user microcomputer to a super-minicomputer.

A common theme throughout the AT & T range is the "Unix" operating system. Created at

Business/Professional Computer Unit Shipments 1982-88



The Japanese have yet to make their mark in the West in professional personal computers. This Sanyo MBC 550 gives a hint of what is to come

Bell Laboratories over a decade ago, Unix is a multi-user operating system with a strong bias toward communications.

Already Unix has a broad following according to the Gartner Group of industry analysts, the market for Unix-based systems will grow to \$6bn in 1988 from \$150m in 1980. AT & T is expected to take a major share of that market.

AT & T is expected to fill in the gaps in its product portfolio with several products that it will license from outside manufacturers. One of the most important will be Convergent Technologies, a California company that specialises in building multi-user workstation systems. Convergent is developing a special product (or products) for AT & T but they are expected to be high performance 16-bit multi-user systems.

In addition, AT & T is widely rumoured to be preparing a product for the personal computer market.

AT & T's entree into office

Software conquers complex keyboard barrier

Japan poised for new breakthrough

JAPANESE software has recently conquered the challenge of the 2,000-plus Chinese characters, called "kanji," and the country's market for desktop computers is expected to increase rapidly, beginning this year or next.

A widespread lack of familiarity with keyboards, the lack of a uniform operating system among different brands, and bureaucratic barriers to computer networks have combined to leave Japan well behind the West in the use of small computers.

The Japan Electronics Development Association (JEDA) said that in 1982 sales of "personal computers" increased sharply, by 116.2 per cent in value, to ¥231bn (\$1.01bn), and by 166.5 per cent by number, to 762,169.

JEDA said sales of "office computers" increased by about 30 per cent, to ¥5,321, worth about \$1.5bn.

While JEDA has not yet assembled its estimate for 1983, Software International Inc. estimates that a million microcomputers were sold in 1983. But only 10 per cent, or 100,000, were 16-bit machines suitable for business or Japanese language word processing use. Perhaps 100,000 "dedicated" word processors were also sold.

About 70 per cent of the small computers sold this year in Japan have been game computers, and Software International claims that games account for fully 80 per cent of the software sold here.

Reputation

Anyone who has visited the workplace of a Japanese bureaucrat, businessman, or journalist would look long (searching behind the seemingly obligatory tall piles of papers) before finding a desktop computer. The few that are around are likely to be run by the young women who go to special training schools for word processing, computerised accounting, or programming.

Indeed, Japan's reputation as a technological hotbed would pale quickly if the current state of desktop computers were taken as the major criterion. But the situation is changing very quickly.

Until recently it has been difficult for small computers to handle the Japanese character set, and documents were

turned out by a secretary skilled with brush and inkpot. Unlike Westerners, few Japanese workers—especially men—have ever had the need to type.

Now, innovative software has been developed so that a basic set of 2,000 Kanji can be stored on about 60 kilobits of memory. Word processing requires that an operator type out a word in either roman letters or Japanese phonetic symbols (called "Kana") and then select the correct Kanji until the correct one appears.

While the speed by even a good Japanese-language typist is perhaps half that of handwriting, speed, typing on a Japanese word processor is now cheaper, easier, and faster than on a Japanese typewriter, which had a keyboard as big as a desk.

Since mistakes can be corrected on word processors, and with the results being clear and reproducible, the interest in "wajiro" as it is called here, is great among Japanese office managers.

As if the language was not enough of a barrier, the various computer manufacturers initially ran into problems by not using a standard operating system, such as M-DOS or CP/M. That meant that software written for one company's machine could be used on another machine only if it was altered.

Fearful of giving competitors any ground, an infertile field was laid for software development in Japan.

In order to use software which runs on a standard operating system, one must often have a special software disk with the correct operating system. Japanese computer enthusiasts rejoice because the price for these standard operating disks has dropped from

\$160 to about \$48, but in Western nations the computer comes equipped to handle one or more operating systems.

Toshiba, NEC, Japan's leading small computer makers, with about 50 per cent of the market, and Epson, known for its printers abroad, have moved to remedy this with MS-DOS and CP/M operating systems built in, and the result has been encouraging. Others are following.

NEC claims about 600 different types of software are available for its 9800 series. About 100,000 of these classic machines have sold since they were introduced in October 1982, priced between ¥328,000 to ¥398,000 (\$1,400-\$1,750).

IBM-Japan is rapidly becoming a major force in Japan's small business computer market by its "5850 Multi-station." Priced between \$4,000 and \$8,000, IBM will not say how many it has sold but is known to be pressing Matsushita, the company which makes several major components, to increase production.

Fujitsu, Hitachi, Sharp, Toshiba, a joint venture between Fujitsu and Matsushita, Sord, Apple, Radio Shack, and several others are all marketing small computers in Japan. Given the size and engineering expertise of these companies, and their recent commitment to develop in-house software engineers, the stage is set for what could be rapid increases in small computer purchases.

Japan's telecommunications law has prohibited most computer networks, and there is nothing like the colonies of computer "hackers" in the West chatting away via computer. But with a new law expected in Japan by April 1985, computer networks will develop eventually.

The Japanese take heart by recalling that in the 1960s the first exported Toyotas, underpowered and tinny, literally fell apart at the high speeds normal on Western highways. Few doubt that Japan will eventually overcome a similar shaky start in small computers.

By a Special Correspondent

"Once a year, for the past five years, Sir Clive Sinclair has stunned the computer world by introducing a computer product that breaks new ground in both price and technology. With his new QL micro, he has done it again."

Personal Computer News, February '84

"...a specification that obliterates contemporary price/performance standards"

Financial Weekly, January '84

"...for £399 the QL offers the sort of package that would cost you getting on for 10 times that sum elsewhere in the marketplace."

Evening Standard, January '84

"At its price, it is going to be well nigh impossible to beat."

Daily Telegraph, January '84

"Sinclair have opened a whole new market for computers by marketing the QL at such a low price. It would be an ideal machine for Estate Agents, shop-keepers, colleges, schools, hobbyists and who knows who else?"

Electronics and Computing, March '84

"It could be argued that the software itself is worth the £399 price (in which it is included)"

Electronics and Computing, March '84

"...destined to be one of the most important microcomputers ever...it suddenly puts serious business applications and serious computing in easy reach—even of those who've never dared to touch a computer before."

Soft, March '84

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Personal Computing Today, April '84

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SINCLAIR

THE DESK-TOP REVOLUTION 17

Britain's enthusiasm for the personal computer is unmatched in Europe

UK market surges ahead

BRITAIN has been taking to professional personal computing with an alacrity that is unmatched in Europe although it is still a long way behind that of the U.S.

Demand in Britain has been stimulated for a number of reasons:

● The market has been one of the prime targets for the U.S. industry when it looks overseas. Simply, the common language is the major factor. It often means new products are launched first in the UK.

● More important, there is much more software available in the UK as it only needs relatively small adaptation—which it does not always get.

● The awareness of personal computing in business has been stimulated by the remarkable boom in home computers. One in 10 homes in the UK have a computer, with a high proportion in upper income households where there is a higher chance of people also using them at work.

● Government has stimulated awareness. It has backed the widespread use of computers in schools and has supported a number of trial office automation schemes.

Awareness has been stimulated by British television which was the first in the world to run a major series of programmes on computer literacy—which have since been shown or copied around the world.

● Britain has for many years had a particularly high level of skills in computer software, although there is still a shortage of people for the industry. It has meant there are a number of specialist software companies which have been set up to write programs for personal computers.

● This has also resulted in a number of entrepreneurial computer specialists setting up their own companies. Most have concentrated on home computers where there is a multitude of companies.

Successful

The best-known and most successful are Sinclair Research, founded by Sir Clive Sinclair, and Acorn, founded by two of his former colleagues, Chris Curry and Herman Hauser. Other UK companies include Oric, Dragon and Enterprise.

The UK professional market is dominated by the leading U.S. companies. Market leader is the ubiquitous IBM Personal Computer. Other U.S. companies with a strong or growing market share in the UK are Apple, DEC and Commodore.

BY JASON CRISP

One of the most successful companies in the field is British Applied Computer Techniques, based in Birmingham, is one of Britain's fastest growing companies. ACT was a well established and successful computer bureau. Its dramatic growth—turnover has been doubling each year—came with its entry into professional personal computers.

ACT began by importing under licence the Sirius computer from Victor Technologies, then a high flying new Californian company. The Sirius was one of the first computers to use a powerful 16-bit microprocessor which have since become more or less crucial for business personal computers.

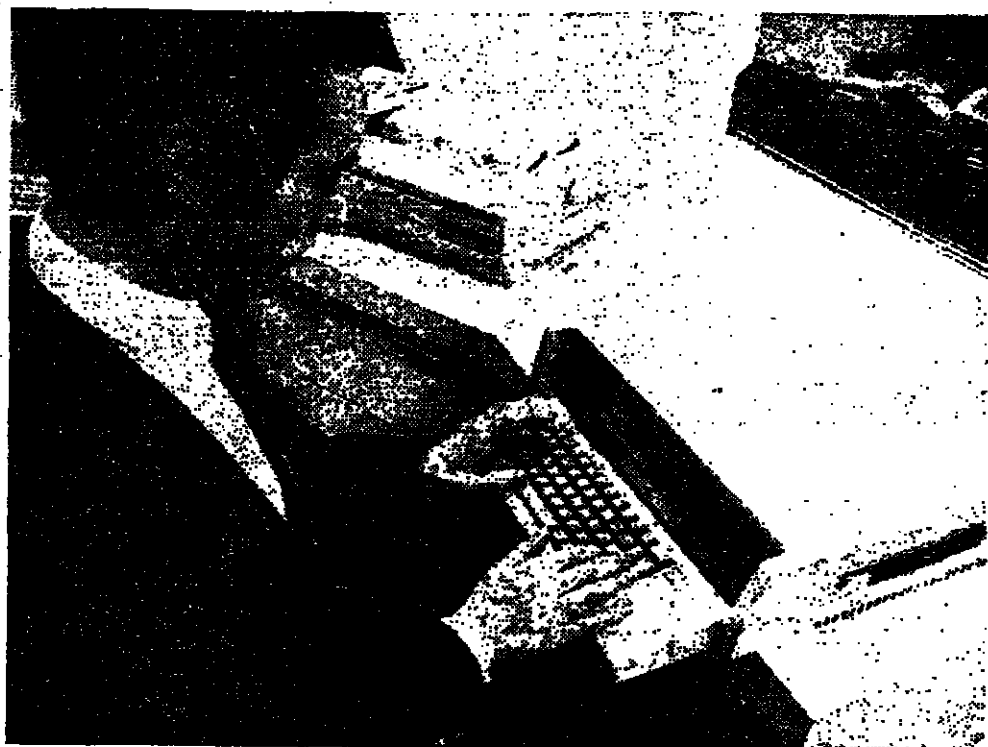
The 16-bit processor gave the professional user the power and the speed to perform useful functions at work. ACT undoubtedly benefited from the fact that IBM was too busy and too pressed trying to meet the extraordinary demand for its PC in the U.S.

This gave ACT an advantage of at least 18 months in which time it established itself as the market leader. ACT has been quick to capitalise on that advantage. In the UK it has a wide dealer network and a significant business in supplying software for professional computers, including the PC. More important it has developed and now manufactures its own professional computer—the Apricot. This is a small, transportable machine similar to the Sirius.

Ironically, Victor Technologies, the company which was so central to ACT's initial success, went bankrupt in U.S. As a result, ACT is now buying the worldwide manufacturing and marketing outside the Americas, of the Sirius computer.

In addition, sales of the Apricot are starting in many countries including the U.S. itself where ACT has just appointed a distributor.

But competition for ACT is becoming much tougher in the UK, particularly as IBM begins to put on the pressure. Last year the two companies had an



Apple has yet to announce its portable so others have done it first. This is the British-built Xcalibur—basically an Apple II in a box with tiny monitor screen and integral disk drive

approximately equal share of the UK market. Simon Pearce at the consultants, IDC-Europe, says: "By the end of the year, the IBM PC was being shipped in large volumes. It is difficult to say but on a month by month basis it probably has a 20 per cent to 25 per cent share of the market. Everyone else's share has been static."

Price cut

Yet a month ago IBM cut the price of its PCs across Europe up to 20 per cent. Shortly afterwards it began to allocate supplies to dealers—and its own sales force apparently—because of shortages. There has been much speculation as why IBM would choose to cut prices just before introducing a form of rationing. One view is that IBM in common with a number of other major suppliers is keen to increase the level of direct sales of personal computers to companies.

"The trend is very markedly towards direct sales particularly because of the increase in interest by large organisations," says IDC-Europe's Simon Pearce.

This is particularly because of the importance of personal

telecommunications business with its computing division to mount a still more attack in the sector.

But all agree that office equipment is an area where the small nimble company has major advantages over heavier footed larger corporations, in grasping opportunities in a fast changing and highly competitive market. And this issue goes to the heart of the present self-questioning over Germany's ability to win back high-tech ground lost not only to the Americans and Japanese, but in some fields to the British and French.

Rightly or wrongly, Germany is not seen as friendly territory for the small outfit, for the aggressive entrepreneur with a good idea, but little capital of his own. Rather, the image the Germans themselves propagate is of a state of a highly powerful economy, founded on thoroughness, but instinctive caution and orthodoxy as well. These latter qualities have proven out of the economic miracle of the post war decades. They have helped endow the country with an imposing superstructure of massive banks and corporations. They have, however, militated against risk taking, the conventional view runs.

In fact, venture capital funds are now starting timidly to appear. Computer experts are beginning to break away on their own, setting up their own companies, especially in the software field. Another pointer to a new vitality is the sell-out success of a recent DM 300m micro-electronics application programme sponsored by the Government. About half the applicants were new companies, founded within the last 15 years. Above all, as the latest DM 5m programme and the acres of newspaper articles on the issue of technological backwardness show, the country has woken up to the risk.

The combination of this new awareness, the presence in Bonn of a Government committed to rolling back the frontiers of bureaucracy and the state, and the knowledge that huge profits are the prize of success in as fast growing a sector as office equipment, suggests that West Germany may overcome the challenge sooner than some suspect.

More aid for high-technology sectors

W. Germany seeking to close the gap

IF WEST GERMANY is to shake off the presumed technological backwardness that is the nightmare of its planners, then few sectors will provide a closer-watched testing ground than office automation.

The electronic office, with its interlocking array of digital switchboards, microcomputers, electronic typewriters and video screens, is fast arriving in the most powerful economy in Western Europe.

But as it does, and office workers adapt to new technologies, a new familiar fear has surfaced: that Germany for all its pre-eminence in Europe, might be slipping irretrievably behind Japan and, above all, the U.S. in the advanced technologies which will create wealth and jobs into the 21st century.

Not for nothing did the sector feature in the Government plan, unveiled in mid-March, which provided DM 5bn of State aid for high technology industries, above all in the data processing and microelectronics field. But close reading of the report suggests that not all is bad.

It identifies the central weakness of West German industry in this field: micro or desktop computers, long neglected by domestic manufacturers and with glaring consequences.

More than half of the domestic market in such computers, with a price tag of DM 4,500 (\$1,750) or upwards has been captured by just three U.S. manufacturers. Hewlett-Packard, Apple and Commodore, alone. The major West German producers, Triumph-Adler, holds only 5 per cent.

But in the two adjacent market segments, electronic typewriters and intermediate data technology, German producers have a strong position, which increasingly is being used as a springboard.

The two main home manufacturers of typewriters, Olympia and Triumph-Adler, have both had severe problems in the past. Olympia, 51 per cent owned by the long troubled electrical group AEG, was slow adjusting to the shift from electromechanical to electronic technology, and in 1981 lost DM 113m.

Much the same has been true of Triumph Adler, which has given its parent Volkswagen no few troubles since the car group acquired its control in

BY RUPERT CORNWELL
in Bonn

1979. As recently as 1982 VW took a DM 34m loss at its subsidiary, as well as being forced to waive DM 100m of debt repayment. Triumph however is now showing a new vitality. Last year's sales topped DM 2bn, and as the company stretches its sales range it expects to be back in profit for 1984. The company is aiming to sell over 50,000 of its "Alphatron" range of microcomputers this year. Coupled with its high performance TA 1000 office computers, Triumph-Adler is hoping to double its share of the home market to 10 per cent within a few years.

New system

In addition it is offering a comprehensive planning and organisation system, called "Fritz," specially tailored for the needs of senior executives, as well as the "BITBY" screen-oriented text system, which can be linked to the new teletext service offered by the German post office.

Nixdorf, the dynamic computer company built up by Herr Heinz Nixdorf, and which is floating off 20 per cent of its capital, is another growing force on the West German office equipment scene, through its wordprocessing and small computer systems. It is aiming to double its sales and create 10,000 new jobs over the next four years.

Siemens, which leans instinctively towards large systems projects such as factory automation, is also concentrating increasingly on office automation, from its natural starting point of the telephone. The company has on the market its EMS 5500 Office system. It is planning to merge its private



This month we give you a hand with integrated software.

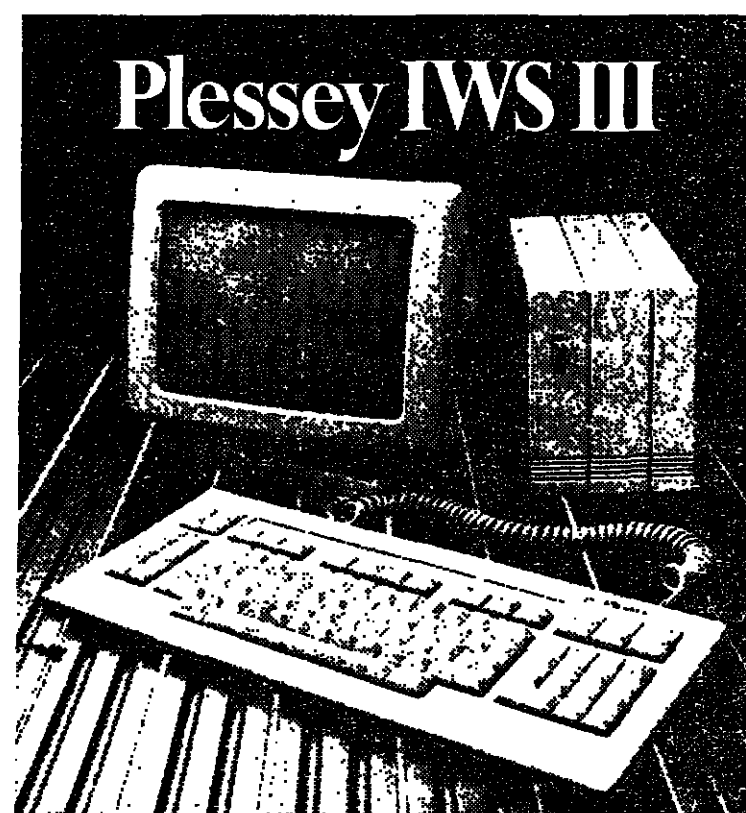
This month's magazine includes a handy 14 page guide to integrated software. We explain what it is, how it helps the businessman and what software is available.

We also check out the new touch screen Hewlett Packard computer and review two portables, the Grid Compass and the Sharp PC-5000. And we look at the business potential of six popular home computers.

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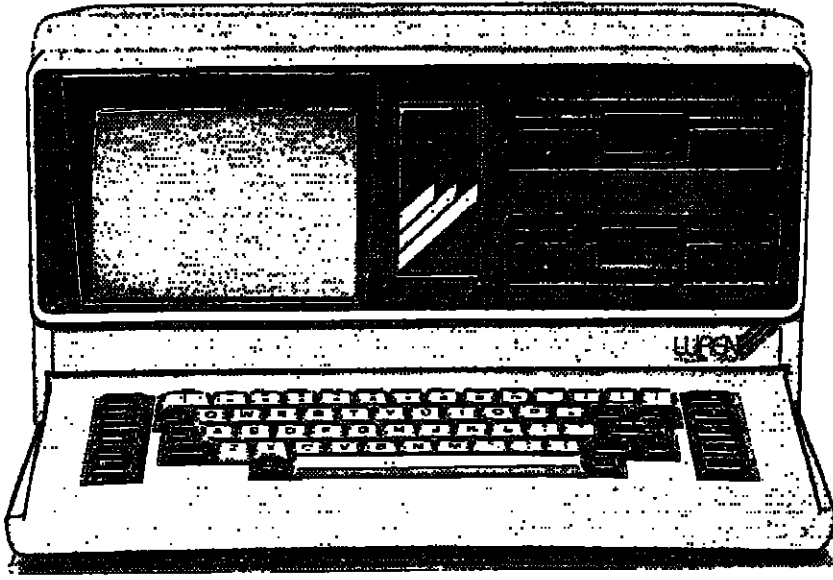
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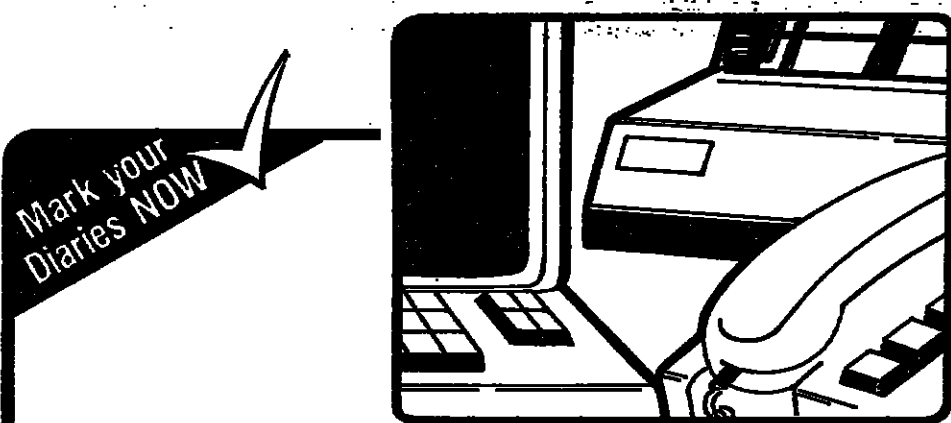
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Director Strategy and Corporate
Development, Ing C,
Olivetti & C, SpA.

Mr Hirokazu Negishi
Senior Research Scientist,
Canon Inc.

Mr Michael O'Connor
Head of Office Systems Division,
The Central Computer and
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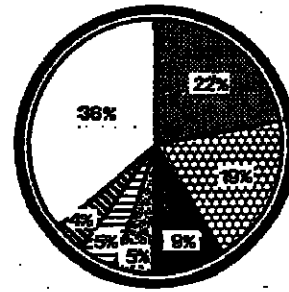
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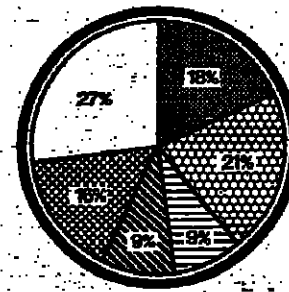
THE DESK-TOP REVOLUTION 18

MARKET LEADERS' SHARES – Western Europe, units shipped to business/professional market over \$1000 per unit

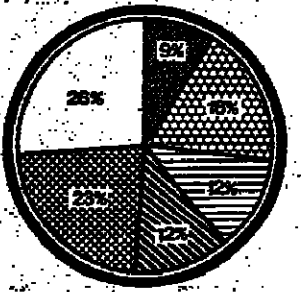
1982 — 203,000



1983 — 280,000



1984 — 426,000



COMMODORE APPLE TANDY OSBORNE OLIVETTI ACT/SIRUS IBM OTHERS

Italy: Olivetti anticipates big sales increase in late 1980s

Micro market lags behind

DESPITE the presence in Italy of Europe's leading data processing equipment company—Olivetti—the Italian market for desk-top microcomputers is still lagging a couple of years behind developments in other major industrialised European countries.

This is not surprising: Italy has traditionally been slower in nurturing new technologies than other countries such as West Germany and France. It also lacks a sufficient degree of expertise, trained personnel and the computer culture which is more advanced in other countries.

On the other hand, the past two years have seen rapid growth in Italy's personal computer market. The market is still relatively small — some 100,000 personal computers have been sold in Italy by the end of last month. Of these only around 30,000 to 35,000 desk-top models could be called professional. The others were for home use. That means that at an average price of 15m per professional model, total Italian sales to business users have been around 1,150bn (\$93m).

But the growth has been fast: two years ago the number of desk-top computers sold in Italy was negligible. By the end of 1982 the total was around 30,000 (both home and professional). At the end of last year the number sold had more than doubled to 70,000 and since the beginning of 1984 a further 30,000 have been sold, bringing us to the current estimate of 100,000 machines.

By year-end, the total expected to reach 150,000, of which some 40,000 will be professional models.

Prospects

"It is a slow process now. We have had very quick expansion in two years, but before we can reason this needs in Italy we must educate the businessmen and show them what automation can do. I don't think we will see great growth for another year," opines one manufacturer of personal computers.

While Italy does lag behind, certain sectors of the economy have been remarkably eager to make use of personal computers. Prominent among these sectors are banking and insurance, retailing and other service industries. Giorgio Armani, the Milan-based fashion designer, is now using a personal computer to keep track of orders and changes in design. Fiat, the auto giant, recently placed an order to buy 1,000 Olivetti M-24 personal computers. These will be used in Fiat's 1,000 outlets in Italy to speed delivery time and keep track of sales. And in Italy's banks, while it may take weeks

to clear a cheque and many minutes to get the attention of a dawning clerk, personal computers are being used increasingly.

Olivetti reckons that its share of the Italian market in personal computers last year was 35.9 per cent, a rather precise figure in a market where others are reluctant to hazard a guess.

IBM is just behind Olivetti and then there is the traditional list of Apples, Commodores, and other well-known makers of personal computers fighting for a piece of the pie. From the UK, Act has recently signed an agreement to sell 2,000 of its Apricot models in the next year.

But what is the philosophy of office automation in Italy? Few individuals are in a better position to discuss this subject than Sig Elserino Piol, Olivetti's joint managing director in charge of strategy. Sig Piol first of all dismisses the phrase "office automation".

"I don't like the words. I would prefer to talk about office work stations," he explains. Olivetti's view is that every white collar worker, from secretaries to managers, needs adequate information tools. The Olivetti version of such tools is found in a work station composed of various components, ranging from a telephone and related communications equipment, electronic typewriters and personal computer to integrated terminals.

"There will in future be fewer layers of management. A flatter management structure as a result," continues Sig Piol. But the real problem is building a network inside a company. "This is where the big battle is taking place among manufacturers. IBM, for example, is going to try to build up the standard for exchanging information and American Tele-

PERSONAL COMPUTERS IN EUROPE

Country market shares—1983 (%), for personal computers of \$1,000 plus

	UK	W. Germany	France	Italy
Apple	17	17	20	16
Commodore	17	18	4	16
IBM	15	15	14	9
ACT/Sirus	15	10	6	—
Olivetti*	—	7	7	34
Tandy	5	6	4	—
Triumph Adler	—	6	—	8
Bull	—	—	3	—
Digital (DEC)	5	—	—	—
Hewlett Packard	5	—	—	—
Leonard	—	—	4	—
Osborne	5	—	—	—
Sharp	—	6	—	—
SMT	—	—	6	—
Total units	85,000	54,000	53,000	32,000

*Olivetti and Logabax in France.

Source: IDC-Europe

phone & Telegraph. Olivetti's new global partner will build a standard for communications.

"One of the major reasons why we are in an alliance with AT & T," notes Sig Piol, "is the need to co-ordinate work stations and telecommunications. This is where Olivetti needs help." Last December AT & T paid U.S. \$360m to buy 25 per cent of Olivetti (it has an option to buy up to 40 per cent in four years' time).

Olivetti will market AT & T products in Italy, and AT & T has agreed to buy 100,000 Olivetti work stations for US\$200m this year to be sold in the States.

Functions

Sig Piol claims that "the most ubiquitous work station will be a personal computer and a telephone." He says that for the next 10 to 20 years the work station will be based largely on these two components but a number of employees will still not take advantage of all the functions of a personal computer, he adds as a caveat.

How about the Italian market?

"The real question in Italy is for medium- and large-sized companies. What you find now in Italy are different stages of automation. The leading-edge companies like Fiat and Alitalia will move fastest but fewer leading-edge companies in Italy are using personal computers than in Germany."

Sig Piol maintains that there exists no technological gap between Italy and the rest of the world (although a number of customers criticise Olivetti's M-20 personal computer model as not offering adequate software).

"The gap is in quantitative terms. If you consider the market in terms of sales and how diffused the computers are, then we are two to three years behind in Italy."

Olivetti, however, reckons that in a few years there will be much increased sales in Italy, and in Europe. Sig Piol is looking for an average growth rate of 30 per cent a year until the late 1980s.

He notes that Olivetti is trying to strengthen its position in Europe, with a new line of personal computers, with the AT & T alliance and with plans for a chain of Olivetti personal computer retail outlets in "several countries in Europe."

"We are strongly convinced that we can be number two in personal computers in Europe. We take it for granted that IBM will lead the market," comments Sig Piol.

The general hope in the Italian market is that professional desk-top models will soon begin to sell as well as home models. Looking ahead, manufacturers hope that it will not just be the Fiat, Benetton, Montedison, Alfa Romeo and banks which make serious use of personal computers. For the time being Italy remains behind.

Sweden launches subsidy plan to boost microprocessor sector

Nordic suppliers confident

DESPITE THEIR relatively small size, Scandinavia's electronics manufacturers are confident they will be able to hold their own against the giants in the increasingly competitive personal computer and office automation scene, partly because of their strong roots in the Nordic market.

By far the largest force in Nordic electronics is the I.M. Ericsson group. While its international standing is rooted in public telecommunications (it says its Ase digital switching system has a 13 per cent world market share) its hopes for future growth are pinned squarely on its information systems division.

The division, which covers integrated office automation, data processing and voice and data transmission, accounted for 30 per cent of total group sales of SKr 25,400 in 1983. Already strong in the terminals business, the unit claims a 15 per cent European market share with its Alfaskop system. The system has a 50 per cent market spread in Sweden, officials say.

Ericsson recently introduced an MD 110 Private Automatic Branch Exchange (PABX) digital voice and data exchange after very heavy development costs. Despite a slow start, it is confidently predicting it will secure "a large chunk" of a total world market estimated at U.S.\$3.5bn. The system will be marketed in North America by Honeywell, after a recent agreement.

Ericsson has been concentrating heavily in the bank automation sector, where it has an especially strong position on

the Swedish market despite some recent setbacks. It introduced a distributed data processing network which can be linked with mainframes in large organisations.

Focusing on the Nordic market, but also active in France and Spain, it has taken in orders totalling over SKr 1bn in the past 18 months. A business version of this so-called system 2000 with software for bookkeeping, word processing and system control (among others) is being aimed at the large and medium-sized users, again mainly on the Nordic market but also to a lesser extent in Europe. "The order book is filled and we are running at capacity," says Mr Rolf Ericsson, Ericsson Information Systems president.

Acquisition

The group's acquisition last year of Facit, the large Swedish manufacturer of intelligent typewriters and minicomputers, was behind fully 10 per cent of Ericsson's 1983 sales growth. "The key words for the future are communications and ergonomics," says Mr Ericsson.

Exploiting its experience in the telecommunications field, Ericsson will focus its strategy on large systems, for example very large private packet switching networks for integrated data communications, Mr Ericsson explains. The group is emphasising the ergonomic aspects of its hardware design and "user friendly" software packages.

Sweden has one of the world's highest densities per worker of

office automation products, as well as bank electronics, post office data exchanges, and CAD/CAM technology. Yet, it has been forced to import some 80 per cent of its microchip requirements, with the remaining 20 per cent being manufactured by two components companies (HAFCO, owned by ASEA, and RIFO, an I.M. Ericsson subsidiary).

The government, as part of an intensive industrial development strategy announced in February, included an SKr 710m five-year subsidy programme to build up the domestic industry in advanced microprocessors.

The move is set against the background of similar but larger programmes in Britain, West Germany, Italy and France.

The development aid directed mainly at HAFCO and RIFO will be aimed at speeding purpose-built rather than standard microchip production.

The world market for specialty chips is expected to grow from the present 20 per cent (of all microchip production) to over 60 per cent within the next six years, the Government says.

Sweden's overall electronics output, SKr 80bn last year, made up over 70 per cent of the Nordic total.

The region's second major force is Nokia, the industrial conglomerate which is Finland's largest privately-held company.

The group recently purchased the formerly state-owned Swedish Luxor group adding

some U.S.\$600m, and broadening its market base in Sweden. It spent some U.S.\$72m last year on product (mainly software) development.

At the recent Hannover fair, the group displayed a multi-function system allowing parallel communication and processing at a workstation, with a screen monitor, its office automation line is based on a workstation which can stand alone, be combined with local networks, or larger computers.

Focus

Nokia's strategy remained focused mainly on the Nordic region. It claims a 45 per cent market share in Sweden with its microcomputer, mainly intended for small and medium-sized users.

At home in Finland it says it has overtaken IBM on the data processing market particularly for banks.

Nordic Data, the small but rapidly expanding Norwegian manufacturer with 1983 sales of Nkr 870m, recently introduced a new personal computer as part of an office automation line aimed mainly at domestic government and industrial buyers, and to a lesser extent similar users in the rest of Scandinavia.

It has had particular success with its Notio software packages. The group's international growth is rooted mainly in scientific and research-related systems.

David Brown in Stockholm

THE DESK-TOP REVOLUTION 19

David Marsh on the French craze for information technology

Micro-mania hits France

TAKE a market in full growth after several years of lagging behind other European countries. Add the presence of all the major American multinational companies, a string of government campaigns to boost product penetration, plus still-powerful influences from domestic manufacturers in certain areas—and you have a picture of the French market for office data processing and communications equipment, more often than not described as a "jungle."

Eighteen months after micro-computer mania first hit the U.S., France last year was caught up in the craze for information technology which swept through Europe.

Although the popularity of computers in the home and the spread of retailing networks remain significantly lower than in Britain and West Germany, growth rates in the industry are comparable with the surge in demand recorded elsewhere. Last year 200,000 "family" computers and 80,000 professional micros were sold in France—more than the cumulative total of all the preceding years.

With the IBM personal computer, launched in Europe at the start of the year, selling less well in France than in other countries, other professional micro-electronics manufacturers—for the moment at least—are holding their own in France against the world's dominant computer company.

Bidding

Apple, for instance, though hard-hit worldwide by IBM's PC, sold 30,000 units in France last year, against an estimated 7,000 to 8,000 for the newly-introduced IBM model.

IBM, whose French subsidiary has double the turnover of Bull, the nationalised French computer group, holds 50 per cent of the overall domestic computer market, and has been bidding strongly—as elsewhere in Europe—to break into telecommunications.

But in the personal computer business, IBM in France has yet to assert its customary dominance over the market—although that step may take place this year as the U.S. multinational brings its French sales network more fully into operation.

Bull, the perpetual No. two in the domestic race with IBM,



In the personal computer sector, IBM in France has yet to assert its customary dominance over the market. Seen here is the IBM PCjr equipped with diskette drive and disk operating system 2.1 in use at home.

in spite of years of government support, still claims to be in with a chance of tweaking the giant's nose in fast-moving markets for computerised business information systems. Pointing to its integrated office data processing and communications systems, Scribe, being installed for the French Finance Ministry, M. Jacques Stern, the Bull president, says that even IBM has been caught out over the past few years in its strategy for matching computers with telecommunications. And he says the pace of market change gives smaller rivals a chance to secure strong positions in specialised slots.

With IBM standards clearly holding the data processing sector in sway, no company active in France hopes to do more than simply carve out niches in the market. But they can be profitable for all that, as small specialised micro-computer companies such as Goupil, Leonard (owned by Crenson Loire) and Logabax (majority-owned by Olivetti after its cash crisis-induced restructuring in 1981) have shown over the past year or so.

All the hardware companies, as well as France's computer service groups, which are among Europe's leaders in this field, have drawn benefits from an information technology market estimated to have grown by 20 to 25 per cent to FF40bn last year.

Information technology is easily the most buoyant part of France's overall electronics and electrical sector which, according to the industry's federation,

turned over FF180bn in 1983. Other big U.S. companies present in France—including Digital Equipment, Burroughs and Hewlett Packard—have announced improved French results for 1983 and have stepped up their commitment to the domestic market.

Purchases

Digital Equipment, for example, is spending FF200bn building a production plant at Valbonne in the south of France; Hewlett Packard, along with Wang and Apple (the latter two have no manufacturing presence in France) have announced they are making more purchases of French components in order to increase the "Frenchness" of their products.

Foreign computer makers are clearly taking a leaf out of IBM's book in confirming their intention to play a direct domestic role rather than simply supplying the market with imports. IBM, with its four French plants, two research laboratories, FF25bn in turnover—and tax payments which make the company France's largest taxpayer—has made itself an indispensable economic partner for the French Government.

Similarly, smaller British companies active in the home and educational computer business—led by Sinclair, Acorn and Oric—have found that the French market can be extremely welcoming provided the right domestic partners can be found. Acorn, for instance, has explored teaming up with

Thomson—which makes what is for the moment France's most successful small microcomputer, the T07—for an assault on the schools sector. The Government at the end of last year unveiled plans to boost the number of schools computers to 100,000 by 1988. The number at present is an embarrassingly modest 11,000 or so—and the Government has promised tenders will be open to foreign as well as French companies.

There have also been recent signs of a wind of change in France's traditionally protected market for computer equipment in Government administrations and nationalised companies. This follows a loosening of bureaucratic procurement procedures set up during the 1970s to support Bull and other domestic suppliers.

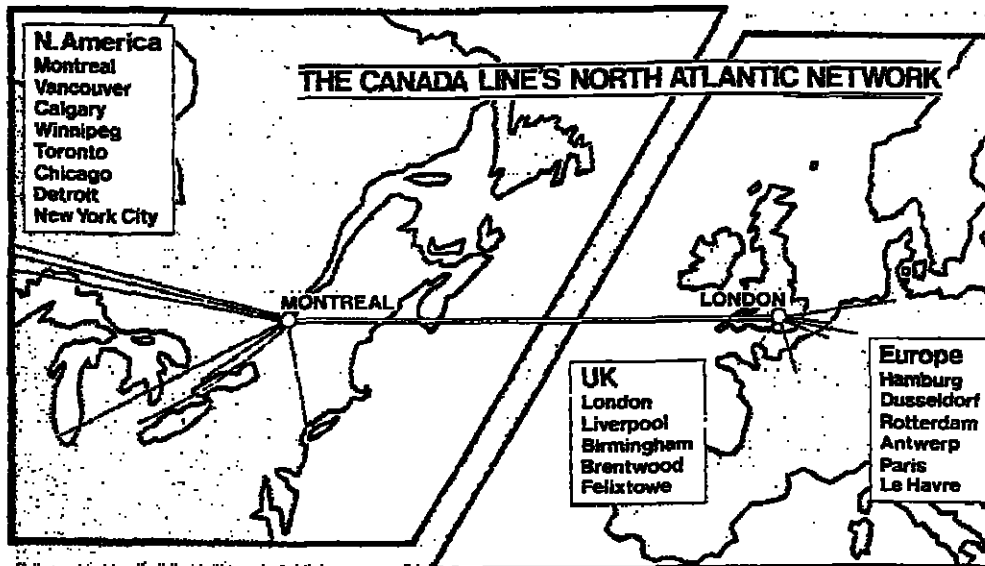
The Government now realises protectionist policies actually cost the taxpayer dearly—the celebrated affair of the Banque Nationale de Paris being forced to buy Bull rather than IBM equipment just after the 1981 change of government was a case in point—and impeded necessary adaptation to competition.

As a result, domestic computer groups are turning ever more frequently to foreign collaboration, agreements to boost their sales range. Leonard has teamed up with Thorn-EMI, Thomson with Fortune and Eagle of the U.S. and Bull with Ridge and Convergent, also from California.

That might not please the industry purists who once insisted on the need for an all-French computer industry. But it is giving computing customers what they want—which is what the French Government now seems to want too.

PERSONAL COMPUTER MANUFACTURER REVENUES

Western Europe business/professional sector: figures in \$m	
1982	726
1983	1,063
1984	1,448
1985	1,881
1986	2,376
1987	2,985
1988	3,623



CASE STUDY: CANADA LINE

More efficient network

LAST YEAR the chairman of Canadian Pacific Steamships, Harvey Romoff, saved his company a lot of postage—he sent his Christmas card to staff by electronic mail.

Four hundred employees at 24 offices, in seven countries read their boss's Yuletide greetings on their desk-top screens. He had even drawn a little Christmas tree complete with flashing lights.

His graphic attempts were made possible by the freight-carrier's north Atlantic computer network that provides a range of office automation facilities like word processing, spread sheets, financial modelling, graphics, traditional transaction processing and electronic mail. The company is now called The Canada Line after a merger this January with the Dartcan interests of Maritime Belge. It has an annual turnover of \$200m and offices in the U.K., the U.S., Canada, Belgium, the Netherlands, France and Germany.

Its business is to ship containers across the north Atlantic. It demands good communication and administrative efficiency; a mis-directed telex can in the worst instance steer a batch of containers to the wrong country. Good communications saves money.

In 1981 the directors realised they had to improve their network which relied heavily on the telephone, telex and a main-frame computer for batch processing. Board members were also frustrated by the lack of information available to them

which made their decision making difficult. They employed Graham Brown, now a consultant to improve their efficiency.

"When I went to CP Ships one of the first things people said to me was: 'We're putting all this information into the computer but we can't get it out.'"

He formed a team of four people to create a new system. An analysis of the company showed that it was communications intensive but it lacked a good communications network. Telephones, for instance, are not the best tool if Hamburg wants to talk to Toronto, 10 hours behind.

At the time the traditional method of computerising a company was to get machines to do the manual work faster. "I took the view that flow-charting the current procedures only helped embalm the existing organisation and methods in electronic aspic," says Mr Brown.

Objectives

He set out to identify which corporate objectives could be helped by an information system. In this way the configuration of machines would fit in with the company philosophy, instead of the reverse which is often the case when systems are installed.

His attitude also showed that word processing was not important to the company. As many manufacturers' "office automation" packages are little more than upgraded word

processors, it helped him in his later choice of supplier.

To introduce his ideas and the forthcoming system to the staff, Mr Brown set off on a tour of the company's offices: "I went there to see and to be seen; you can't do analysis sitting in an office."

"It's important to talk to the people doing the work and find out what they want from a system. I was also trying to merchandise the benefits and stamp a few ideas into their minds. We didn't talk about technology, just communication."

From his visits emerged an implementation strategy and he chose to install electronic mail first, because he says it gives people a sense of belonging to a larger group. The data and word processing functions can be added later.

While Mr Brown was travelling, two team members were looking at equipment and suppliers. "Traditionally you choose kit, having based your decision on detailed technical evaluations before running a final check on the reputation, financial stability and engineering organisation of the vendor. We did it differently."

The team produced a rough list of office automation vendors able to offer service back-up to the company's offices. To prevent the traditional mistake of providing a solution before finding the problem, the team worked out the software requirements before looking at packages on offer.

Mr Brown wanted to keep the

project simple and sought a single source for both hardware and software—an attitude criticised by many consultants. "But it saves finger-pointing when things don't run according to plan," says Mr Brown.

The list of suppliers was further shortened after initial contractual discussions and after their financial credibility had been checked. Mr Brown also insisted that they share his view of the system and were able to demonstrate the equipment using his data.

"In the end you're buying a company, not this particular product. You want to know that it'll be around long enough to support the system and upgrade it."

"I think there is one fundamental truth to obey when buying equipment: the supplier has to show it working. And if you accept this, then, with the speed of technological change, the kit you buy is inevitably going to be obsolete."

He also insists on a trial working period—for which you pay—with your chosen product. This is based on the experience of having to cancel his original order because the well-known supplier failed to give the necessary back-up.

Such decisions are extremely difficult, and fear of ridicule often forces people to stick with a system they know is wrong. Mr Brown emphasises the need for a mature manager to be in charge of the operation.

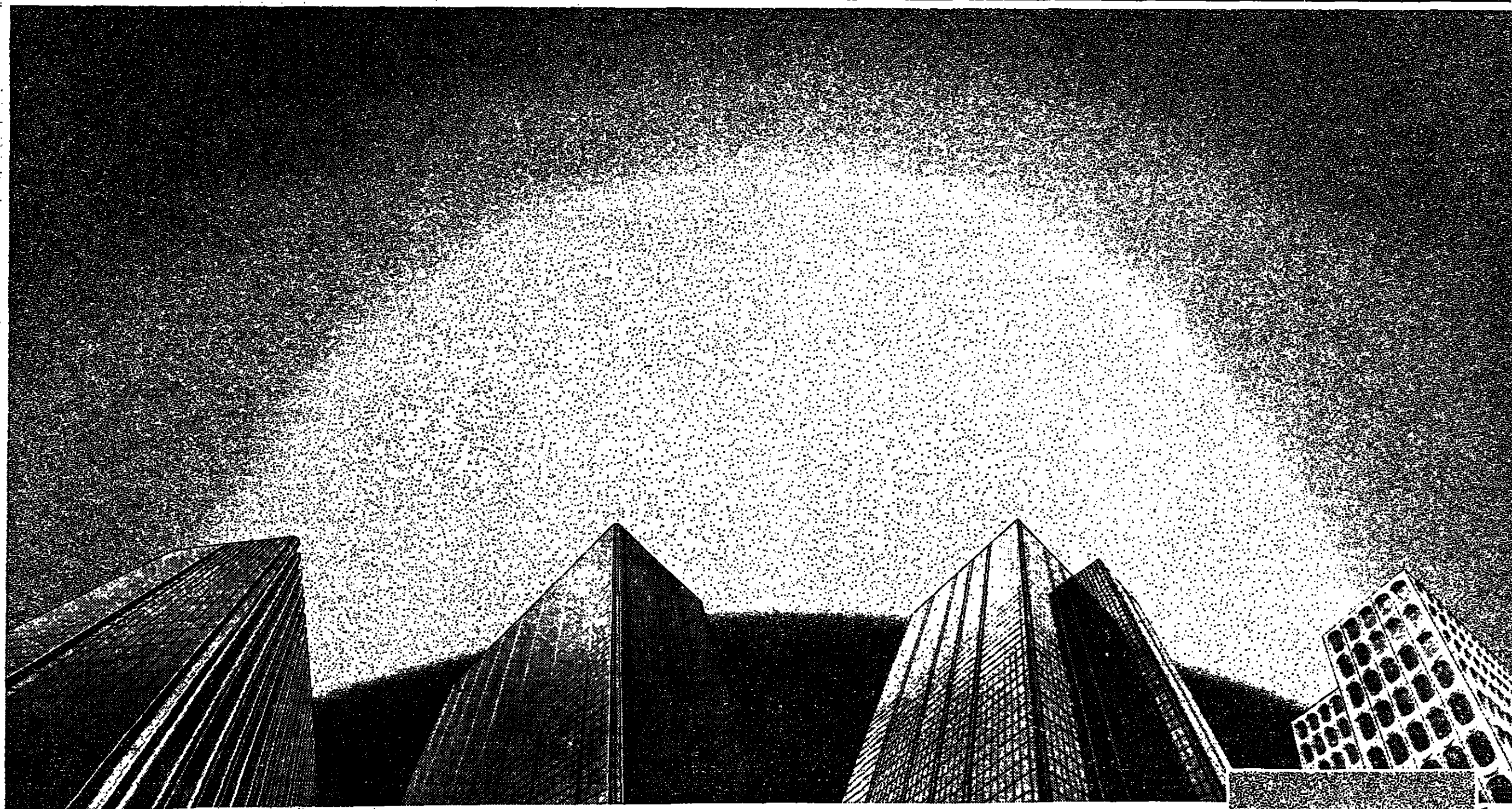
Justified

Hewlett Packard finally won the order which was then worth about £100,000 and has since risen to over £1m. They supplied three HP 3000 mini computers, 70 HP 125 personal computers, and 90 HP 24/24b terminals which were distributed to the different offices.

The network has justified itself. North American telecommunications costs are down 66 per cent, which is worth about \$8100,000. And the volume of traffic is up. Transportation businesses expect to spend 15 per cent of revenue on information systems. The Canada Line spends 1 per cent.

Personal computers have been integrated into the network instead of threatening to break it up. The transmission of the access to data is crisper since, subject to control, the system is accessible from any terminal. In fact, one executive has swapped his fruitbowl in the dining room for a terminal. He is now in contact with the business at all times. Some executives, of course, prefer fruit.

Peter Knight



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You may have read a lot about the integrated office, but have you seen one yet?

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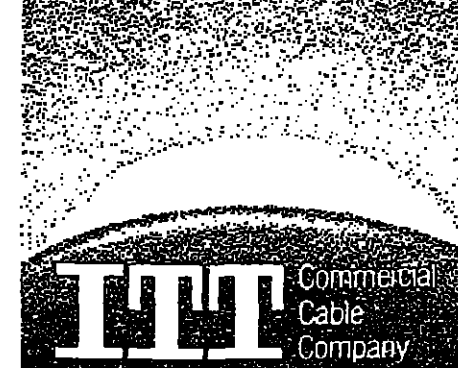
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THE DESK-TOP REVOLUTION 20

The contest to capture the personal computer market has begun in earnest

Two main rivals jockey for lead position

THE "desktop revolution" began in earnest when large companies bought professional personal computers in massive numbers.

In 1982, for example, Connecticut Mutual Life Insurance Company, a U.S. blue chip insurance company boasting \$6.5bn in assets, ordered 1,000 IBM PCs as the basis of its operations and sales information system.

It was a massive order for what was at that time, a very new machine.

But the habit was clearly catching. Within weeks of the launch of Apple's "Macintosh" desk top computer, the leading accountants Peat, Marwick, Mitchell and Company had placed orders for 3,500 of the controversial devices. And with 40,000 Macintoshes sold in the first 60 days after launch, there is no reason to doubt Apple chairman Steven Jobs' claim: "Demand at present is several times more than the number we can make."

And it has to, if Apple is to live up to its reputation as the only company which will be able to live with IBM in the personal computer market. At a Financial Times conference last year, for example, Ms Jean Yates of Yates Ventures, a U.S. based personal computing consultancy predicted: "The hardware winners will be Apple, IBM, one or two low-cost manufacturers, and perhaps one innovative, major data processing shop which is able to make the transition."

Analysis

It is an analysis with which Mr Jobs agrees.

"In the future I would expect IBM to have around 20 to 30 per cent of the total market and Apple to have about the same," he says.

Now Apple can claim credit for starting the personal computer, and therefore the desktop revolution, but these days to achieve and maintain that share against the marketing muscle of IBM would be a considerable feat.

It suffered badly in 1983 when despite doing over \$1bn worth of business it lost market share heavily to IBM. Its Apple II and Lisa computers have never fulfilled their promise and it has seemed increasingly a one product wonder.

BY ALAN CANE

So Apple has to justify its faith in its view of the office of the future as exemplified by the Macintosh, perhaps the most talked-about personal computer in recent years.

Jobs and Apple co-founder Stephen Wozniak designed and built their first machine as a rented garage, excited that they could cram an entire computer onto a single printed circuit board at a cost so low that it could be owned by ordinary people.

"Our ideas haven't changed at all," Mr Jobs said in London earlier this month. "We are still concerned with the interaction between the user and our computer."

"When you consider that nobody in personal computers has more than about 5 per cent of their possible market you can see that we have not really made a dent yet."

The market he is anxious to address is the majority of people who are either afraid of computers or have no time or inclination to work through massive instruction manuals.

"When we designed the first Apple, it never really occurred to us that people could be intimidated by computers or by 400-page manuals."

So the pure strain of Apple, the Apple II, and so on, gave way to the new hybrids, Lisa, and now Macintosh. Both of these machines leaned heavily on the ideas of a group of researchers based at the Xerox Palo Alto research laboratories.

It was they who first came up with the idea of little pictures or "icons" on the screen to represent activities—a filing cabinet to file memos, for example, they who first thought of picturing the executive's desk as a series of simultaneous

"windows" on the screen. They who first developed the "mouse," a palm-sized box on rollers with a button on the top which could be moved around on the desk top to move a pointer on the computer screen.

What has Apple added to the Xerox concept? "We figured out the best way to implement these techniques," says Mr Jobs.

"The interface we have built between the user and the computer is better. We were able to stand on Xerox shoulders and see a little further."

In the immediate future, Mr Jobs sees two principal areas for Apple to address, with IBM as its principal competitor in each.

First, the market for sophisticated machines costing up to \$1,500—chiefly the high end home market and the educational market from kindergarten to age 12 or so.

Apple offers the Apple II in its various forms for this market; the IBM reply is the PCjr, a machine still not available in this country.

But the PCjr is, by all accounts, doing badly. It is likely to be revamped and relaunched. According to Mr Jobs, IBM erred in limiting the capabilities of the machine so that it could not be used as a true home-and-office link and also failed to realise the paucity of educational software available in a form which could run on the machine.

The second area, for machines costing up to \$3,000, is the electronic office—productivity tools for the executive—and the electronic college. Here, the Macintosh will compete directly with the IBM PC and its clones. It has to be said that the level of innovation built into Macintosh will be of instant appeal in an educational environment in comparison with the staid and orthodox PC.

Mr Jobs sees two factors as critical for success in personal computer markets in the future.

First, effective channels of distribution. That means both dealers and mass retailers along the lines of the "store-within-a-store" concept. In the UK, for example, Apple's managing director Peter Cobb is already talking to Harrods.

Second, software. "Without the software, you are dead," says Mr Jobs, acknowledging that software companies will not be prepared to allocate resources to projects destined for computer manufacturers who might not be in business in a year's time.

Some indication of the quality of software now being written for Macintosh is the fact that an upgraded version of Lotus Development's "Symphony" program will be available later in the year.



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Best selling

Symphony is the latest from the writers of the best selling 1-2-3 package which started the trend to integrated software. MacSymphony (to coin a title) is likely to combine spreadsheet, word processing, graphics, communications, data base management and graphical input as well as output.

What does Mr Jobs predict for the future? Certainly portability—"We'll put Mac in a book," an echo of the old Xerox "Dynabook" concept of a paper back sized machine suited for business or educational use.

There will certainly be moves towards flat screens and to desktop machines which combine computing and voice telephony. Later in the year, Mr Jobs expects to announce an innovative

laser printer for the office.

Colour for Macintosh computers is further off. The choice at the moment is between high definition black and white and medium definition colour—and for the \$2,000 or so Macintosh costs, Apple settled for black and white. "We could do colour today, but it would cost \$10,000," Mr Jobs grins.

The company already designs several of its own integrated circuits and is beginning to look at microprocessor design.

"The Innos transporter is a very interesting device—it is along the right lines," Mr Jobs believes.

And there is already a new maturity, due in part to the growing quality of Macintosh. Mr John Sculley, who took over as president and chief executive a couple of years ago, partly due to the company's confidence in its projected \$200m investments in research, development and marketing.

Mr Jobs believes that the telephone is still the only machine to have a natural home on the desk—"We are out to make the computer the second desktop machine," he says.

But the fact is that this ambition will only be realised by Apple and not IBM if it can convince the world that Macintosh is the way of the future—and most industry watchers are reserving their judgment on that.

Few managements seem ready to accept automation without some cost justification

Savings hard to identify

"WHEN discussing plans to acquire new technology, managers generally say that the introduction can go ahead if significant staff savings or gains in productivity will result."

"In practice, such hard justifications are rarely achieved."

Ms Emma Bird, a senior consultant with the electronic office specialist Eosia, makes these points in the course of a research study into decision making in office automation.

Her conclusions are echoed by the interim results of the UK Government's £5m sponsored office automation trials programme, which were made public at a conference late last month.

According to the speakers, the move to automated systems for the 21 organisations participating in the programme proved "harder, far harder, than vendor promotion had led them to believe. Increased efficiencies and cost savings have been difficult to quantify to date. Unexpected problems have been encountered. Difficulties and disappointments abound."

So it is perhaps not surprising, as another Eosia study indicates, that UK management is being slow to develop sophisticated uses for office automation. The Eosia research team developed a method of scoring different business sectors on their advancement in new technology.

The results showed that professional services scored most highly for advanced use of office automation followed closely by distribution. Central government and local government were at the bottom of the list.

Because information technology trends in Europe tend to lag a couple of years or more behind those in the U.S., it is worth examining the American situation.

Survey results published by consultants Frost and Sullivan indicate that over half the U.S. companies they questioned had developed a strategy for office automation.

"This strategy might be likened to a technical planning approach but there is some plan in place... a consistent pattern is emerging and that is that the financial industries and the insurance industries are showing a keen awareness of the effects of office automation."

The Frost & Sullivan report also suggests that over the next decade, U.S. businesses will invest between \$4,000 and \$5,000 per office worker on office automation equipment—this adds up to a potential of \$300bn.

BY ALAN CANE

\$5,000 per office worker on office automation equipment—this adds up to a potential of \$300bn.

It adds that word processing and data processing terminals will triple from 7m to 22m in the next five years and that by 1989 some 27m electronic office devices will be installed.

By 1985, according to an analysis of 1,400 manufacturing companies 100 per cent of secretaries will have workstations, 90 per cent of professionals, 70 per cent of departmental heads and 13 per cent of presidents.

Sun shining

With manufacturers at last able to provide products—chiefly in the form of the desktop computer—which can provide the functions needed in a true professional workstation, the sun seems to be shining at last on the office automation business.

What of Europe and, in particular, the UK?

The Eosia study shows that most middle sized and large companies have installed limited office automation including word processors and personal computers.

Yet in most cases the use is far from optimal or intensive. It concludes that the British slowness lies in diffuse decision making and with old methods of justifying costs which no longer apply.

Now for a surprise. The poor, devoted user (department or individual) is by no means as ignorant of the value of new technology as commonly supposed. Eosia found: "In a study of the installation of 100 pieces of office automation equipment, the application was identified by office automation management in only 26 per cent of cases. In 60 per cent of cases it was the user who started the ball rolling."

But authorisation for expenditure tends not to be in the user's hands. In 51 per cent of cases, this came from chief executive or board level, in 34 per cent of cases from office automation management and in only 9 per cent of cases from the user department.

So how is the user to justify funds spent on office automation? It depends on the size of company, Eosia found. All companies agreed that the chief justification is bound up with offering support to a key function—word processing in a typing pool, for example, or proposal calculation and printing in an insurance office.

After that it was clear that smaller firms needed better justification in terms of cost savings than the bigger companies, many of whom were buying equipment with the chief aim of gaining practical experience.

The results of the UK Government trials suggest that true cost savings will be hard to identify.

Mr Cliff Hudson, of British Rail Engineering, which used equipment supplied by Information Technology, said: "If you are after savings in a conventional sense, then you are on a loser" and went on to suggest that management should view automation as a way of generating wealth rather than cutting costs.

Mr Sam Radcliffe of the Greater London Council (Bank Xerox) said automated systems should be seen in terms of value added benefits. It had not seen any real savings.

On the other hand, officials at Cambridgeshire County Council using IBM equipment maintained that in every department where an office system had been installed there was a subsequent cost justification to introduce more equipment.

So it seems that for those who can afford it—or who can take part in Government trials—hands-on experience can help the customer to see new ways in which office automation can improve business effectiveness.

But "cost-justification" will remain a problem for the small company with limited resources. Perhaps, suggests Ms Bird of Eosia, manufacturers and retailers should consider renting or leasing equipment on favourable terms to small companies to their mutual benefit.

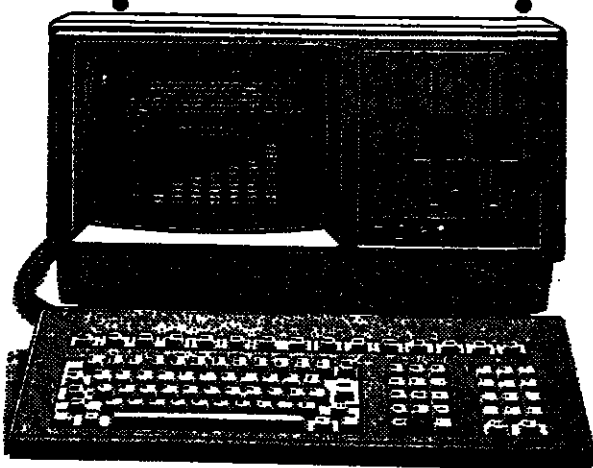
"Marketing IT to UK businesses," Eosia, Farnham Common, Slough, £50.

"The U.S. professional executive-workstations market," Frost & Sullivan, London, \$1,275.

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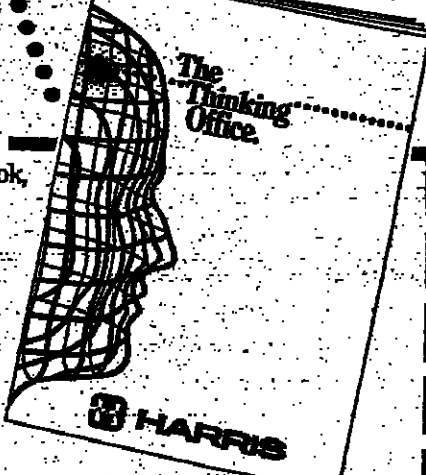
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